Liebert® AFC

Air-Cooled chiller and Freecooling chiller with Screw Compressors

Product Documentation

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Liebert® AFC

New **Liebert® AFC** is the high-end air-cooled freecooling chiller designed for the efficient and reliable thermal management of medium and big Data Centers.

The extreme efficiency of new **Liebert® AFC** is the result of its capability to satisfy most of the annual cooling request with freecooling, while inverter-screw compressors are covering the remaining load in high ambient temperature conditions.

New **Liebert® AFC** ensures top reliability and availability, being designed for the operation up to extremely high ambient temperatures, in conditions of unstable power supply and since it features only high-quality components and state-of-the-art technologies.

The N** versions combines the high performance of the freecooling system with an innovative glycol free system that allows confining the glycol inside the unit reducing the risks of environmental pollution.

The *IZ models are equipped with an inverter driven screw compressor that allows to maximize efficiency, in particular way during the partial loads or when unit is operating in mixed mode.

The unit uses the environmental friendly refrigerant HFO (R1234ze), with a low level of GWP.

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The product conforms to European Union directives 2006/42/EC; 2014/30/EU; 2014/35/EU; 2014/68/EU.

Units are supplied complete with a test certificate and conformity declaration and control component list.

Liebert® AFC units are CE marked as they comply with the European directives concerning mechanical, electrical and electromagnetic safety.

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Features and Benefits

Liebert® AFC air-cooled chillers have been designed for the production of chilled water.

They are also produced in versions with built-in freecooling or freecooling glycol free device and with pump group mounted on the unit; the units can be provided with numerous accessories included in the price list.

The **Liebert® AFC** line is designed according to the most advanced techniques available in the industry today and is complete with all the elements necessary for automatic and efficient operation. Each unit is completely assembled in the factory; after the vacuum, it is charged with the necessary quantity of refrigerant and tested.

All units are equipped with one or two independent refrigerant circuits, each consisting of: air-cooled condenser, semi-hermetic screw compressor (with or without inverter regulation), shell and tube evaporator and pipes. The components of the refrigerant circuit present in the liquid line are the filling valves, the dehydrating filters, the shut-off manual valve, the humidity indicator light and the electronic expansion valve; on the compressor there is always the tap on the delivery line while it is optional on the suction line.

The hydraulic circuit consists of grooved hydraulic pipes connected by joints, status flow and, in the freecooling versions, by chilled water coils and two two-way valves; in the freecooling glycol-free versions an intermediate plate exchanger separates the heat exchange between the air exchangers, where glycol is present, and the hydraulic circuit of the evaporator where there is chilled water from the user circuit; suitable heating elements prevent the water from freezing in the hydraulic circuit of the evaporator.

The semi-hermetic screw compressors are complete with the following protection / safety devices: oil heater, internal safety valve, oil level (optional), electronic protection with function for controlling the temperature of the motor windings, the oil temperature and the sense of screw rotation.

In the versions with screw compressors with integrated inverter, the operating stability and operating efficiency of the chiller is further improved thanks to the continuous speed control of the compressor itself and the optimized management of the Vi compression ratio (thanks to an automatic internal valve); in addition to cooling the inverter itself, the compressor also manages and monitors safety functions with integrated sensors such as high pressure, low pressure, engine temperature, temperature and oil level alarms, operating conditions close to the application limits allowed.

For the operation of the inverter compressor, a line reactor is mounted on the electrical panel; this device is indispensable and provides for reducing the harmonics transmitted by the inverter to the power supply network.

Liebert® AFC water chillers are controlled by the Vertiv™ iCOM3™ microprocessor which manages all the operating conditions of the units. The user can vary and/or modify the operating parameters via the display keyboard installed on the electrical panel.

The electrical control panel is equipped with all the necessary safety and operating devices to ensure reliable operation.

The compressor motors are equipped with protections on all three phases and are started by three-pole contactors.

The refrigerant R1234ze falls into refrigerant safety group A2L in accordance to ISO-5149 and to EN-378 instead R134a and R513A are A1.

The new **Liebert® AFC** liquid chillers are classified as “indirect vented closed system” (according ISO-5149 and EN-378) and are designated to be installed in a location class III (open air) with occupancy access category Class C (as per ISO-5149 and EN- 378) where only authorized personnel have access; with these limits for both A1 and A2L refrigerant gas there aren’t any charge restriction. This limitation must be managed by the customer.

Please refer to these standards for further details. This level needs to be confirmed by the customer.

2 Model Number Description

1. Digit Nomenclature

The unit is fully defined by twenty-five (25) digits.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
C	H	4	0	6	5																			

Digit	Feature	Value	Description
1	Versions	C	Chiller
		F	Free cooling
		N	Free cooling - Glycol free
2	Compressor type	H	Screw
		I	Inverter screw
3	Refrigerant	4	R134a
		Z	R1234ze
		3	R513A
4-6	Size	XXX	Cooling capacity / 10 kW
7	Water Regime	S	Standard delta T
		H	High delta T
8	Efficency	G	High Efficiency
9	Power supply	0	400V/50Hz
10	Fans and Acoustics	C	EC fans / Base
		E	EC Fans / Premium
		L	Low noise
		Q	Quiet
11	Pumps	0	None
		1	Single standard head pump + Hydraulic kit
		2	Single high head pump + Hydraulic kit
		3	Double standard head pump + Hydraulic kit
		4	Double high head pump + Hydraulic kit
		5	Single inverter pump + Hydraulic kit + Flow meter
		6	Double inverter pump + Hydraulic kit + Flow meter
		7	Hydraulic kit
		A	Variable flow - 1 inverter pump + H.K. + Flow meter
		B	Variable flow - 2 inverter pump + H.K. + Flow meter
		C	Variable flow - NO pumps + H.K. + Flow meter
12	Adiabatic System	0	None

Digit	Feature	Value	Description
13	Coil options	0	Microchannel Condenser
		1	Microchannel Condenser / Base coating
		2	Microchannel Condenser / Premium Coating
		A	Microchannel Condenser + Microchannel FC Coil
		B	Microchannel Condenser + Micro-channel FC Coil / Base Coating
		C	Microchannel Condenser + Mi-crochannel FC Coil / Premium Coating
		D	Microchannel Condenser + Finned FC coil
		E	Microchannel Condenser + Finned FC coil / Base Coating
		F	Microchannel Condenser + Finned FC coil / Premium Coating
14	Display	A	Small graphic display with monitoring
		B	Large touch display with monitoring
15	Refrigerant circuit options	0	None
		1	Suction shut-off valve on compressors
		2	Dual Relief valve and changeover valve
		3	Suction shut-off valve on compressors + Dual Relief valve
		4	Plumbed shut-off valve for refrigerant safety valve
		5	Suction shut-off valve on compressors + Plumbed shut-off valve
16	Low / High Ambient temperature	0	None
		1	Heater for electrical panel
		2	Heater for electrical panel + Trace heaters
17	Power supply line option	0	Single line (main line)
		1	Single line (main line) + Ultracap for control
		2	Double line: main line + second line for control
		3	Double line: main line + second line for control + Ultracap
		A	ATS on main line
		B	ATS on main line + Ultracap for control
		C	ATS on main line + second line for control
		D	ATS on main line + second line for control + Ultracap
18	Condensing coil filter / Protection grid	0	None
		1	Condensing coil filters
		2	Protection grid
		3	Condensing coil filters + protection grid
19	Packing	0	Standard
		1	Seaworthy + skid for flat rack
		2	Wooden box + Seaworthy
		3	Wooden Cage + Seaworthy
25	Special Request	0	None
		X	As specified

The **Liebert® AFC** units are available in the following versions:

MODEL			
Digit	**Option**	**Description**	**Notes**
1	**C**	**Chiller**	Unit is equipped with one or two refrigerant circuit, which is the only source of cooling for the user fluid.
	F	**Free cooling**	In addition to the refrigerant circuit, the unit equipped with freecooling coils that directly cool down the user fluid when the ambient conditions allow it.
	N	**Free cooling - Glycol free**	In addition to the refrigerant circuit, the unit equipped with freecooling coils that cool down the user fluid (water in this case) through an internal fluid-fluid exchanger when the ambient conditions allow it.
2	**H**	**Screw**	Mechanical capacity modulation of the unit is carried out by controlling the slide-valve position of the screw compressors.
	I	**Inverter screw**	Mechanical capacity modulation of the unit is carried out by varying the rotation speed of at least one screw compressor.
7	**S**	**Standard delta T**	Unit optimized for a temperature difference of 6K between inlet and outlet. At the design leaving water temperature, the suggested water temperature difference for this configuration is between 5K and 8K.
	H	**High delta T**	Unit optimized for a temperature difference of 9K between inlet and outlet. At the design leaving water temperature, the suggested water temperature difference for this configuration is between 8K and 12K.

CONFIGURATION			
Digit	**Option**	**Description**	**Notes**
10	**C**	**EC fans / Base**	This configuration includes a type of fans with a basic level of efficiency and noise emissions.
	E	**EC Fans / Premium**	This configuration includes a type of fans with an optimized level of efficiency and improved noise emissions.
	L	**Low noise**	This configuration includes a type of fans with an intermediate level of efficiency and significantly improved noise emissions. The nominal airflow is reduced with a limited impact on the unit capacity and ambient limits.
	Q	**Quiet**	This configuration includes a type of fans with an intermediate level of efficiency and the addition of special soundproofing and anti-reverberant materials that limit the direct acoustic emission of the compressors, the noise coming from the refrigerant flowing in the pipes, and any resonances of the frame. The nominal airflow is furtherly reduced with a relevant impact on the unit capacity and ambient limits, while the overall noise emissions are the best achievable,

13	**0**	**Microchannel Condenser**	For chiller units (Digit1=C). Condensers are not treated.
	1	**Microchannel Condenser / Basecoating**	For chiller units (Digit1=C). Condensers treated with a high-level quality painting.
	2	**Microchannel Condenser / Premium Coating**	For chiller units (Digit1=C). Condensers treated through a full immersion process with the aid of electrical power.
	A	**Microchannel Condenser + Microchannel FC Coil**	Currently available for glycol-free freecooling units (Digit1=N). Condensers and freecoling coils are not treated.
	B	**Microchannel Condenser + Microchannel FC Coil / Base Coating**	Currently available for glycol-free freecooling units (Digit1=N). Condensers and freecooling coils are treated with a high-level quality painting.
	C	**Microchannel Condenser + Microchannel FC Coil / Premium Coating**	Currently available for glycol-free freecooling units (Digit1=N). Condensers and freecooling coils treated through a full immersion process with the aid of electrical power.
	D	**Microchannel Condenser + Finned FC coil**	Currently available for freecooling units (Digit1=F). Condensers and freecoling coils are not treated.
	E	**Microchannel Condenser + Finned FC coil / Base Coating**	Currently available for freecooling units (Digit1=F). Condensers treated with a high-level quality painting, freecooling coils are provided with pre-painted (polyester) fins.
	F	**Microchannel Condenser + Finned FC coil / Premium Coating**	Currently available for freecooling units (Digit1=F). Condensers and freecooling coils treated through a full immersion process with the aid of electrical power.
15	**0**	**None**	Basic refrigerant circuit: compressors are equipped with discharge shut-off valve and there's no redundancy on safety valves.
	1	**Suction shut-off valve on compressors**	Compressors are equipped with suction and discharge shut-off valves.
	2	**Dual Relief valve and changeover valve**	Each refrigerant safety valve is doubled with a changeover valve allowing maintenance activities without any refrigerant loss.
	3	**Suction shut-off valve on compressors + Dual Relief valve**	Compressors are equipped with suction and discharge shut-off valves and each refrigerant safety valve is doubled with a changeover valve allowing maintenance activities without any refrigerant loss.
	4	**Plumbed shut-off valve for refrigerant safety valve**	Each safety valve is installed with a plumbed shut-off valve upstream allowing maintenance activities without any refrigerant loss.

	5	**Suction shut-off valve on compressors + Plumbed shut-off valve**	Compressors are equipped with suction and discharge shut-off valves and each safety valve is installed with a plumbed shut-off valve upstream allowing maintenance activities without any refrigerant loss.
16	**0**	**None**	Unit is not equipped of any heating systems for electrical panel and hydraulic circuit. Not selectable for glycol-free (N*) units.
	1	**Heater for electrical panel**	Unit is equipped with heater for the electrical panel. Not selectable for glycol-free (N*) units.
	2	**Heater for electrical panel + Trace heaters**	Unit is equipped with both heater for the electrical panel and trace heating system for the hydraulic circuit. Standard execution for glycol-free units and not selectable for freecooling (F*) units which normally work with antifreeze mixtures.
17	**0**	**Single line (main line)**	Unit is equipped with one disconnector Main switch; (only main supply line is required).
	1	**Single line (main line) + Ultracap for control**	Unit is equipped with one disconnector Main switch and a secondary switch for control boards supply;
	2	**Double line: main line + second line for control**	Unit is equipped with one disconnector Main switch and a secondary switch for control boards supply;
	3	**Double line: main line + second line for control + Ultracap**	Unit is equipped with one disconnector Main switch and a secondary switch for control boards supply;
	A	**ATS on main line**	Unit is equipped with Automatic Transfer Switch; in case unit main line is missing, ATS switch to UPS/back-up supply line; (main supply line and a secondary supply line for unit are required).
	B	**ATS on main line + Ultracap for control**	Unit is equipped with Automatic Transfer Switch; in case unit main line is missing, ATS switch to UPS/back-up supply line; (main supply line and a secondary supply line for unit are required).
	C	**ATS on main line + second line for control**	Unit is equipped with Automatic Transfer Switch and a secondary switch for control boards supply; in case unit main line is missing, ATS switch to UPS/back-up supply line; (main supply line, secondary supply line for unit and another supply line for control boards are required).
	D	**ATS on main line + second line for control + Ultracap**	Unit is equipped with Automatic Transfer Switch and a secondary switch for control boards supply; in case unit main line is missing, ATS switch to UPS/back-up supply line; (main supply line, secondary supply line for unit and another supply line for control boards are required). Unit is equipped also with supply buffer module for control boards.

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Operating Range

Working Limits

Minimum temperature of outdoor air entering condenser coils (with standard operating unit):

- - 25°C for Freecooling models with R134a;
- - 20°C with R1234ze, -20°C for all N* glycol free units
- - 20°C for all units with inverter pump
- - 10°C for Chiller models.

Maximum outdoor air temperature varies according to the model, as indicated in the following tables.

The permitted water flow rate is indicated in the Operating limits Table. Higher flow values can cause erosion and vibrations inside the tube bundle heat exchanger.

The minimum allowed water flow corresponds to a maximum thermal variation of about 8°C for S (standard delta T) version, about 12°C for H (high delta T) version. More severe operating conditions can cause the action of the safety devices that block the unit.

The maximum return water temperature with a fully loaded unit is 32°C; higher return temperatures are allowed only at start-up.

The maximum percentage of glycol allowed is 50% (35% with pump groups). The minimum percentage of glycol required depends on the minimum ambient air temperature conditions relating to the installation site.

The maximum hydraulic operating pressure is 10 barg: consider that this limit does not depend on the presence / absence of pumps mounted on the unit, therefore it is necessary to check the maximum static head of the pump (indicated on the pump plate) and that the circuit water is never pressurized to more than 10 barg-maximum static head of the pump.

Nominal power supply tolerance: 400V +/- 10%; max. voltage unbalance: 2%.

See the ‘Operation Range Table’ in which each model’s limits are indicated; for different values ask your agent.

Max altitude: < 2000 mt

Unit storage conditions:

- Between +0°C and + 45°C for all models, ask your Vertiv™ representative for T < 0°C; humidity 80% R.H.; non condensing.

Refrigerant

This unit is designed for use with R134a/R513A/R1234ze (all group 2, not dangerous according to PED Directive).

According ASTM E681-04 @ 21ºC R1234ze is not flammable, so the Safety Data Sheet of this refrigerant says that is not flammable with no issue for stock or transport for the refrigerant cylinders; for the unit see dedicated chapter.

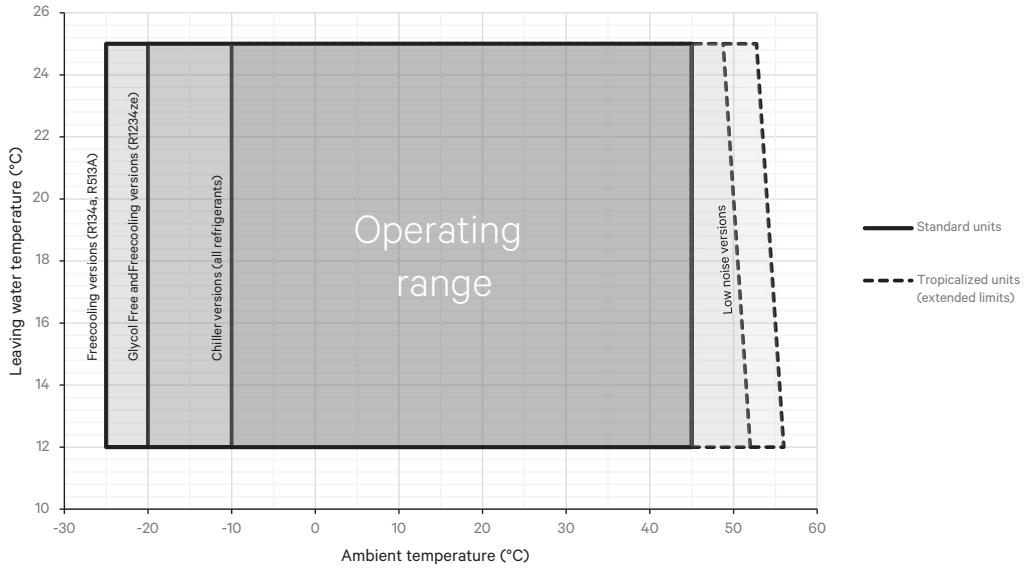
According to ISO-819, R134a and R513A are classified in safety group A1, instead R1234ze(E) is classified in safety group A2L: lower flammability.

One of the characteristics of this refrigerant (R1234ze) is the absence of flammable mixture with air under 21°C of ambiance and controlled humidity conditions; however when humidity or temperature goes up, this refrigerant can become flammable and can represent a potential danger if flammability risks are not properly mitigated

See UM for A2L restrictions

Operating Limits

The following graph is a generic indication of the operating limits of the **Liebert®AFC** range:



NOTICE

The maximum ambient temperature for all **Liebert®AFC** units is 45°C. To extend the operating range above this threshold please contact **Vertiv™** or its representative: the unit in that case may require some design changes (tropicalized version).

NOTICE

Some configurable options like low noise, quiet or adiabatic versions may affect the extended limits of **Liebert®AFC** units. Please contact **Vertiv™** or its representative for detailed information.

Refer to the following tables for the extended ambient limits related to the specific **Liebert®AFC** models, in tropicalized version. This must be intended as an ultimate physical limit referring to rejection capacity of the condenser at the **HP** switch threshold, not considering intermediate protection functions normally active in the standard **Vertiv™** controller.

Table 3.1 – Models: CH4/CH3***SG0

Models: CH4/CH3***SG0		065 SG0	075 SG0	080 SG0	090 SG0	100 SG0	110 SG0	125 SG0	140 SG0
Operating range									
Maximum air inlet temperature (1)	°C	56			55				53
Minimum air inlet temperature	°C	-10							
Maximum leaving water temperature	°C	25							
Minimum leaving water temperature	°C	12							
Min fluid flow	m³/h	50		60		70	75		95
Max fluid flow	m³/h	150		185		190	220		300
Safety devices settings									
High pressure switch set	barg	20							
High pressure safety valve set	barg	22							
HP safety valve (each circuit)	#	1				2			
High pressure safety valve connection	inch	1 1/4" G							
Low pressure switch	barg	0,5							
Low pressure safety valve set	barg	14							
LP safety valve (each circuit)	#	1							
Low pressure safety valve connection	inch	3/4" G							

(1) – Extended limit @ nominal air flow; water outlet temperature 20°C; full load

Table 3.2 – Models: CH4/CH3***HG0

Models: CH4/CH3***HG0		065 HG0	075 HG0	080 HG0	090 HG0	100 HG0	110 HG0	125 HG0	140 HG0	165 HG0	180 HG0	195 HG0
Operating range												
Maximum air inlet temperature (1)	°C	57	56		55				52			46
Minimum air inlet temperature	°C	-10										
Maximum leaving water temperature	°C	25										
Minimum leaving water temperature	°C	12										
Min fluid flow	m³/h	38		45	50		55	60	65	80	85	90
Max fluid flow	m³/h	100		110	120	130	155	180		220	260	320
Safety devices settings												
High pressure switch set	barg	20										18
High pressure safety valve set	barg	22										
HP safety valve (each circuit)	#	1				2						3
High pressure safety valve connection	inch	1 1/4" G										
Low pressure switch	barg	0,5										
Low pressure safety valve set	barg	14										
LP safety valve (each circuit)	#	1										
Low pressure safety valve connection	inch	3/4" G								1" G		

(1) – Extended limit @ nominal air flow; water outlet temperature 20°C; full load

Table 3.3 – Models: CIZ***SG0

Models: CIZ***SG0		065 SG0	075 SG0	080 SG0	085 SG0	095 SG0	110 SG0	125 SG0
Operating range								
Maximum air inlet temperature (1)	°C	56	55	56	55	56	53	53
Minimum air inlet temperature	°C	-10						
Maximum leaving water temperature	°C	25						
Minimum leaving water temperature	°C	12						
Min fluid flow	m³/h	50		60		70	75	
Max fluid flow	m³/h	150		185		220	220	
Safety devices settings								
High pressure switch set	barg	18						
High pressure safety valve set	barg	22						
HP safety valve (each circuit)	#	1			2			
High pressure safety valve connection	inch	1 1/4" G						
Low pressure switch	barg	0,0						
Low pressure safety valve set	barg	14						
LP safety valve (each circuit)	#	1						
Low pressure safety valve connection	inch	3/4" G						

(1) – Extended limit @ nominal air flow; water outlet temperature 20°C; full load

Table 3.4 – Models: CIZ***HG0

Models: CIZ***HG0E		065 HG0	075 HG0	080 HG0	085 HG0	095 HG0	110 HG0	125 HG0	140 HG0	150 HG0
Operating range										
Maximum air inlet temperature (1)	°C	56	54	56	54	54	53		53	
Minimum air inlet temperature	°C	-10								
Maximum leaving water temperature	°C	25								
Minimum leaving water temperature	°C	12								
Min fluid flow	m³/h	38		45		50		60	65	70
Max fluid flow	m³/h	100		110		130	150	180	220	
Safety devices settings										
High pressure switch set	barg	18								
High pressure safety valve set	barg	22								
HP safety valve (each circuit)	#	1			2					
High pressure safety valve connection	inch	1 1/4" G								
Low pressure switch	barg	0,0								
Low pressure safety valve set	barg	14								
LP safety valve (each circuit)	#	1								
Low pressure safety valve connection	inch	3/4" G							1" G	

(1) – Extended limit @ nominal air flow; water outlet temperature 20°C; full load

Table 3.5 – Models: FH4/FH3***SG0

Models: FH4/FH3***SG0		065 SG0	075 SG0	080 SG0	085 SG0	095 SG0	110 SG0	125 SG0	140 HG0
Operating range									
Maximum air inlet temperature (1)	°C	56	55		54	54	54	54	52
Minimum air inlet temperature	°C	-25							
Maximum leaving water temperature	°C	25							
Minimum leaving water temperature	°C	12							
Min fluid flow	m³/h	50		60		70	75		95
Max fluid flow	m³/h	150		185		190	220		300
Safety devices settings									
High pressure switch set	barg	20							
High pressure safety valve set	barg	22							
HP safety valve (each circuit)	#	1				2			
High pressure safety valve connection	inch	1 1/4" G							
Low pressure switch	barg	0,5							
Low pressure safety valve set	barg	14							
LP safety valve (each circuit)	#	1							
Low pressure safety valve connection	inch	3/4" G							

(1) - Extended limit @ nominal air flow; 30%Eth.glycol outlet temperature 20°C; full load

Table 3.6 – Models: FH4/FH3***HG0

Models: FH4/FH3***HG0		065 HG0	075 HG0	080 HG0	090 HG0	100 HG0	110 HG0	125 HG0	140 HG0	165 HG0	180 HG0	195 HG0
Operating range												
Maximum air inlet temperature (1)	°C	56	54	55	53	54			51			44
Minimum air inlet temperature	°C	-25										
Maximum leaving water temperature	°C	25										
Minimum leaving water temperature	°C	12										
Min fluid flow	m³/h	38		45		50	55	60	65	80	85	90
Max fluid flow	m³/h	100		110	120	130	155	180		220	260	320
Safety devices settings												
High pressure switch set	barg	20										18
High pressure safety valve set	barg	22										
HP safety valve (each circuit)	#	1				2						3
High pressure safety valve connection	inch	1 1/4" G										
Low pressure switch	barg	0,5										
Low pressure safety valve set	barg	14										
LP safety valve (each circuit)	#	1										
Low pressure safety valve connection	inch	3/4" G								1" G		

(1) - Extended limit @ nominal air flow; 30%Eth.glycol outlet temperature 20°C; full load

Table 3.7 – Models: FIZ***SG0

Models: FIZ***SG0		065 SG0	075 SG0	080 SG0	085 SG0	095 SG0	110 SG0	125 SG0
Operating range								
Maximum air inlet temperature (1)	°C	55	53	55	54	55	52	
Minimum air inlet temperature	°C	-25						
Maximum leaving water temperature	°C	25						
Minimum leaving water temperature	°C	12						
Min fluid flow	m³/h	50		60		70	75	
Max fluid flow	m³/h	150		185		220	220	
Safety devices settings								
High pressure switch set	barg	18						
High pressure safety valve set	barg	22						
HP safety valve (each circuit)	#	1			2			
High pressure safety valve connection	inch	1 1/4" G						
Low pressure switch	barg	0,0						
Low pressure safety valve set	barg	14						
LP safety valve (each circuit)	#	1						
Low pressure safety valve connection	inch	3/4" G						

(1) - Extended limit @ nominal air flow; 30%Eth.glycol outlet temperature 20°C; full load

Table 3.8 – Models: FIZ***HG0

Models: FIZ***HG0		065 HG0	075 HG0	080 HG0	085 HG0	095 HG0	110 HG0	125 HG0	140 HG0	150 HG0
Operating range										
Maximum air inlet temperature (1)	°C	55	53	55	53	55	52		53	52
Minimum air inlet temperature	°C	-25								
Maximum leaving water temperature	°C	25								
Minimum leaving water temperature	°C	12								
Min fluid flow	m³/h	38		45		50		60	65	70
Max fluid flow	m³/h	100		110		130	150	180	220	
Safety devices settings										
High pressure switch set	barg	18								
High pressure safety valve set	barg	22								
HP safety valve (each circuit)	#	1			2					
High pressure safety valve connection	inch	1 1/4" G								
Low pressure switch	barg	0,0								
Low pressure safety valve set	barg	14								
LP safety valve (each circuit)	#	1								
Low pressure safety valve connection	inch	3/4" G							1" G	

(1) - Extended limit @ nominal air flow; 30%Eth.glycol outlet temperature 20°C; full load

Table 3.9 – Models: NH4/NH3***SG0

Models: NH4/NH3***SG0		065 SG0	075 SG0	080 SG0	090 SG0	100 SG0	110 SG0	125 SG0	140 SG0
Operating range									
Maximum air inlet temperature (1)	°C	56	54	55	53	54		53	51
Minimum air inlet temperature	°C	-25							
Maximum leaving water temperature	°C	25							
Minimum leaving water temperature	°C	12							
Min fluid flow	m³/h	50		60		70	75		95
Max fluid flow	m³/h	150		185		190	220		300
Safety devices settings									
High pressure switch set	barg	20							
High pressure safety valve set	barg	22							
HP safety valve (each circuit)	#	1				2			
High pressure safety valve connection	inch	1 1/4" G							
Low pressure switch	barg	0,5							
Low pressure safety valve set	barg	14							
LP safety valve (each circuit)	#	1							
Low pressure safety valve connection	inch	3/4" G							

(1) - Extended limit @ nominal air flow; water outlet temperature 20°C; full load

Table 3.10 – Models: NH4/NH3***HG0

Models: NH4/NH3***HG0		065 HG0	075 HG0	080 HG0	090 HG0	100 HG0	110 HG0	125 HG0	140 HG0	165 HG0	180 HG0	195 HG0
Operating range												
Maximum air inlet temperature (1)	°C	56	54	55	53	54		53	51			44
Minimum air inlet temperature	°C	-20										
Maximum leaving water temperature	°C	25										
Minimum leaving water temperature	°C	12										
Min fluid flow	m³/h	38		45	50		55	60	65	80	85	90
Max fluid flow	m³/h	100		110	120	130	155	180		220	260	320
Safety devices settings												
High pressure switch set	barg	20										18
High pressure safety valve set	barg	22										
HP safety valve (each circuit)	#	1				2						3
High pressure safety valve connection	inch	1 1/4" G										
Low pressure switch	barg	0,5										
Low pressure safety valve set	barg	14										
LP safety valve (each circuit)	#	1										
Low pressure safety valve connection	inch	3/4" G								1" G		

(1) - Extended limit @ nominal air flow; water outlet temperature 20°C; full load

Table 3.11 – Models: NIZ***SG0

Models: NIZ***SG0		065 SG0	075 SG0	080 SG0	085 SG0	095 SG0	110 SG0	125 SG0
Operating range								
Maximum air inlet temperature (1)	°C	55	53	55	54	55	52	
Minimum air inlet temperature	°C	-20						
Maximum leaving water temperature	°C	25						
Minimum leaving water temperature	°C	12						
Min fluid flow	m³/h	50		60		70	75	
Max fluid flow	m³/h	150		185		220	220	
Safety devices settings								
High pressure switch set	barg	18						
High pressure safety valve set	barg	22						
HP safety valve (each circuit)	#	1			2			
High pressure safety valve connection	inch	1 1/4" G						
Low pressure switch	barg	0,0						
Low pressure safety valve set	barg	14						
LP safety valve (each circuit)	#	1						
Low pressure safety valve connection	inch	3/4" G						

(1) - Extended limit @ nominal air flow; water outlet temperature 20°C; full load

Table 3.12 – Models: NIZ***HG0

Models: NIZ***HG0		065 HG0	075 HG0	080 HG0	085 HG0	095 HG0	110 HG0	125 HG0	140 HG0	150 HG0
Operating range										
Maximum air inlet temperature (1)	°C	55	53	55	53	55	52			
Minimum air inlet temperature	°C	-20								
Maximum leaving water temperature	°C	25								
Minimum leaving water temperature	°C	12								
Min fluid flow	m³/h	38		45		50		60	65	70
Max fluid flow	m³/h	100		110		130	150	180	220	
Safety devices settings										
High pressure switch set	barg	18								
High pressure safety valve set	barg	22								
HP safety valve (each circuit)	#	1			2					
High pressure safety valve connection	inch	1 1/4" G								
Low pressure switch	barg	0,0								
Low pressure safety valve set	barg	14								
LP safety valve (each circuit)	#	1								
Low pressure safety valve connection	inch			3/4" G					1" G	

(1) - Extended limit @ nominal air flow; water outlet temperature 20°C; full load

4 Technical Data

Tab 4.1 - Technical Data - FH4***SG0C

Models: FH4***SG0C		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	668	752	834	945	1043	1112	1273	1428
Compressors power input	kW	131	155	170	199	210	227	262	303
Total power input	kW	163	186	208	237	253	271	313	353
Unit EER	-	4,11	4,03	4,01	3,90	4,11	4,1	4,07	4,03
Fluid flow	m³/h	107	120	134	151	167	178	204	229
Total fluid side presure drop	kPa	115	147	134	175	151	139	162	140
Freecooling performance:									
Freecooling capacity [2]	kW	415	429	504	521	599	610	697	701
Total freecooling temperature (ZET)	°C	9.9	8.6	9.6	8	8.7	7.8	7.8	5.8
Unit EER at ZET point	-	21	24	22	25	23	25	25	28
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	84,4	84,5	84,8	84,9	85,1	85,2	85,4	85,4
Sound Power Level PWL [4]	dB(A)	105,9	106,0	106,7	106,8	107,5	107,5	108,1	108,1
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Total power input	kW	31,8	31,8	38,2	38,2	44,4	44,4	50,7	50,7
Total air flow rate	m³/h	238384	238384	286061	286061	333738	333738	381415	381415
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784

Models: FH4***SG0C		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.2 - Technical Data - FH4***SG0E

Models: FH4***SG0E		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	669	754	836	947	1035	1104	1277	1425
Compressors power input	kW	131	154	169	198	208	225	261	301
Total power input	kW	156	179	200	229	243	261	302	342
Unit EER	-	4.29	4.20	4.18	4.14	4.26	4.24	4.23	4.17
Fluid flow	m³/h	107	121	134	152	166	177	205	228
Total fluid side presure drop	kPa	115	147	135	175	129	141	163	137
Freecooling performance:									
Freecooling capacity [2]	kW	419	433	508	526	604	615	704	708
Total freecooling temperature (ZET)	°C	10.1	8.7	9.6	8.1	8.8	8	8	5.9
Unit EER at ZET point	-	26	30	28	31	29	31	32	35
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	78.4	78.6	78.8	79.0	79.2	79.3	79.7	79.9
Sound Power Level PWL [4]	dB(A)	99.9	100.1	100.8	101.0	101.6	101.7	102.4	102.6
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980
Power input (each)	kW	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Total power input	kW	25.3	25.3	30.4	30.4	35.5	35.5	40.5	40.5
Total air flow rate	m³/h	242520	242520	291024	291024	339528	339528	388032	388032
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.75	8.75	8.75	8.75
Freecooling coil									
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865

Models: FH4***SG0E		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.3 - Technical Data - FH4***SG0L

Models: FH4***SG0L		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	637	712	794	894	980	1039	1202	1335
Compressors power input	kW	140	166	182	215	223	243	281	330
Total power input	kW	152	178	197	229	241	260	301	349
Unit EER	-	4,20	3,99	4,04	3,90	4,07	4,00	4,00	3,82
Fluid flow	m^3/h	102	114	127	143	157	167	193	214
Total fluid side presure drop	kPa	105	132	122	157	116	126	146	121
Freecooling performance:									
Freecooling capacity [2]	kW	349	358	423	435	501	508	580	582
Total freecooling temperature (ZET)	°C	7.9	6.3	7.3	5.6	6.4	5.5	5.5	3.2
Unit EER at ZET point	-	52	58	54	61	57	61	61	68
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	72,3	73,0	73,2	73,9	74,1	74,4	75,0	75,8
Sound Power Level PWL [4]	dB(A)	93,8	94,5	95,2	95,9	96,4	96,8	97,7	98,5
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850
Power input (each)	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Total power input	kW	12,2	12,2	14,7	14,7	17,1	17,1	19,6	19,6
Total air flow rate	m^3/h	175803	175803	210963	210963	246124	246124	281284	281284
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m^2	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m^2	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845

Models: FH4***SG0L		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.4 - Technical Data - FH4***SG0Q

Models: FH4***SG0Q		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	611	678	761	852	944	997	1143	1268
Compressors power input	kW	147	177	193	229	238	260	298	355
Total power input	kW	154	184	201	238	248	269	310	366
Unit EER	-	3,96	3,69	3,78	3,58	3,81	3,70	3,69	3,47
Fluid flow	m³/h	98	109	122	136	151	160	183	203
Total fluid side presure drop	kPa	97	121	113	143	125	113	133	112
Freecooling performance:									
Freecooling capacity [2]	kW	307	313	371	379	438	443	507	507
Total freecooling temperature (ZET)	°C	6.2	4.6	5.7	3.8	4.7	3.8	3.7	1.4
Unit EER at ZET point	-	87	97	91	101	96	102	102	113
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	68	68,9	69,1	70,0	70	70,4	71,0	72
Sound Power Level PWL [4]	dB(A)	89,5	90,4	91,1	92,0	92,4	92,8	93,7	94,7
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700
Power input (each)	kW	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7
Total power input	kW	7	7	8,4	8,4	9,8	9,8	11,2	11,2
Total air flow rate	m³/h	142654	142654	171184	171184	199715	199715	228246	228246
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845

Models: FH4***SG0Q		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.5 - Technical Data - FIZ***SG0C

Models: FIZ***SG0C		065	075	080	085	095	110	125
Mechanical cooling performance [1] :								
Cooling capacity	kW	669	734	780	851	960	1110	1255
Compressors power input	kW	128	153	153	175	192	234	262
Total power input	kW	159	185	191	213	236	278	313
Unit EER	-	4,20	3,97	4,09	4,00	4,07	4	4,01
Fluid flow	m³/h	107	118	125	136	154	178	201
Total fluid side presure drop	kPa	118	140	126	45	127	140	163
Freecooling performance:								
Freecooling capacity [2]	kW	415	426	493	507	585	570	693
Total freecooling temperature (ZET)	°C	9.9	8.9	10.2	9.3	9.7	7.9	8
Unit EER at ZET point	-	21	23	21	22	22	25	25
Sound levels								
Sound Pressure Level SPL [3]	dB(A)	84,5	84,5	84,9	84,9	85,2	85,2	85,4
Sound Power Level PWL [4]	dB(A)	106,0	106,0	106,8	106,9	107,5	107,5	108,1
Refrigeration circuits								
Number of refrigeration circuits	#	1	1	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62
Compressors								
Number of compressors	#	1	1	2	2	2	2	2
Type	-	Inverter screw	Inverter screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw
Nominal power	HP	240	290	160/140	200/160	200/180	240/210	240/240
Fans								
Number of fans	#	10	10	12	12	14	14	16
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910
Rotation speed	1/min	110	110	110	110	110	110	110
Power input (each)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Total power input	kW	31,7	31,7	38	38	44,4	44,4	50,7
Total air flow rate	m³/h	238272	238272	285926	285926	333581	333581	381235
Evaporator								
Number of evaporators	#	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63,5	73,5	78,5
Condensing coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75
Freecooling coil								
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m²	25	25	30	30	35	35	40
Water connections								
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-
Dimensions								
Unit length	mm	7026	7026	8296	8296	9566	9566	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784

Models: FIZ***SG0C		065	075	080	085	095	110	125
Weights								
Net weight	kg	6844	6854	8230	8830	10401	10950	11756
Operating weight	kg	7612	7622	9098	9697	11958	12535	13438

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.6 - Technical Data - FIZ***SG0E

Models: FIZ***SG0E		065	075	080	085	095	110	125
Mechanical cooling performance [1] :								
Cooling capacity	kW	671	735	782	853	960	1106	1258
Compressors power input	kW	127	153	152	174	191	232	261
Total power input	kW	152	178	182	204	226	267	301
Unit EER	-	4,40	4,14	4,29	4,17	4,25	4,14	4,18
Fluid flow	m³/h	107	118	125	137	154	177	202
Total fluid side presure drop	kPa	118	141	127	146	111	146	164
Freecooling performance:								
Freecooling capacity [2]	kW	419	430	498	511	591	575	700
Total freecooling temperature (ZET)	°C	10.0	9	10.3	9.4	9.8	8	8.1
Unit EER at ZET point	-	26	29	26	28	27	31	31
Sound levels								
Sound Pressure Level SPL [3]	dB(A)	78,6	78,9	79,0	79,3	79,5	79,3	79,7
Sound Power Level PWL [4]	dB(A)	100,1	100,4	101,0	101,3	101,9	101,7	102,4
Refrigeration circuits								
Number of refrigeration circuits	#	1	1	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62
Compressors								
Number of compressors	#	1	1	2	2	2	2	2
Type	-	Inverter screw	Inverter screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw
Nominal power	HP	240	290	160/140	200/160	200/180	240/210	240/240
Fans								
Number of fans	#	10	10	12	12	14	14	16
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980
Power input (each)	kW	2,5	2,5	2,5	2,5	2,5	2,5	2,5
Total power input	kW	25,4	25,4	30,4	30,4	35,5	35,5	40,6
Total air flow rate	m³/h	242403	242403	290883	290883	339364	339364	387844
Evaporator								
Number of evaporators	#	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63,5	73,5	78,5
Condensing coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75
Freecooling coil								
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m²	25	25	30	30	35	35	40
Water connections								
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-
Dimensions								
Unit length	mm	7026	7026	8296	8296	9566	9566	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865

Models: FIZ***SG0E		065	075	080	085	095	110	125
Weights								
Net weight	kg	6844	6854	8230	8830	10401	10950	11756
Operating weight	kg	7612	7622	9098	9697	11958	12535	13438

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.7 - Technical Data - FIZ***SG0L

Models: FIZ***SG0L		065	075	080	085	095	110	125
Mechanical cooling performance [1] :								
Cooling capacity	kW	639	698	745	808	914	1042	1186
Compressors power input	kW	140	169	166	192	208	257	289
Total power input	kW	153	181	180	207	225	275	309
Unit EER	-	4,19	3,86	4,13	3,91	4,06	3,80	3,84
Fluid flow	m³/h	102	112	119	129	146	167	190
Total fluid side presure drop	kPa	108	127	115	132	101	130	146
Freecooling performance:								
Freecooling capacity [2]	kW	349	357	416	425	492	483	578
Total freecooling temperature (ZET)	°C	7.8	6.6	8.2	7.1	7.5	5.5	5.7
Unit EER at ZET point	-	54	59	52	57	53	61	61
Sound levels								
Sound Pressure Level SPL [3]	dB(A)	73,2	74,5	74,1	75,1	75,2	74,5	75,0
Sound Power Level PWL [4]	dB(A)	94,7	96,0	96,1	97,0	97,5	96,9	97,8
Refrigeration circuits								
Number of refrigeration circuits	#	1	1	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62
Compressors								
Number of compressors	#	1	1	2	2	2	2	2
Type	-	Inverter screw	Inverter screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw
Nominal power	HP	240	290	160/140	200/160	200/180	240/210	240/240
Fans								
Number of fans	#	10	10	12	12	14	14	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850
Power input (each)	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Total power input	kW	11,9	11,9	14,3	14,3	17,1	17,1	19,6
Total air flow rate	m³/h	175733	175733	210880	210880	240626	240626	281173
Evaporator								
Number of evaporators	#	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63,5	73,5	78,5
Condensing coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75
Freecooling coil								
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m²	25	25	30	30	35	35	40
Water connections								
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-
Dimensions								
Unit length	mm	7026	7026	8296	8296	9566	9566	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845

Models: FIZ***SG0L		065	075	080	085	095	110	125
Weights								
Net weight	kg	6844	6854	8230	8830	10401	10950	11756
Operating weight	kg	7612	7622	9098	9697	11958	12535	13438

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.8 - Technical Data - FIZ***SG0Q

Models: FIZ***SG0Q		065	075	080	085	095	110	125
Mechanical cooling performance [1] :								
Cooling capacity	kW	613	666	715	771	876	995	1128
Compressors power input	kW	152	183	178	208	223	280	314
Total power input	kW	159	190	186	216	233	290	325
Unit EER	-	3,86	3,51	3,84	3,57	3,76	3,43	3,47
Fluid flow	m³/h	98	107	115	124	140	160	181
Total fluid side presure drop	kPa	100	117	106	120	107	113	133
Freecooling performance:								
Freecooling capacity [2]	kW	307	312	365	372	431	427	504
Total freecooling temperature (ZET)	°C	6.2	4.9	6.6	5.5	5.9	3.8	4
Unit EER at ZET point	-	88	95	85	92	89	102	101
Sound levels								
Sound Pressure Level SPL [3]	dB(A)	69,4	70,8	70,3	71,5	71,5	70,7	71,3
Sound Power Level PWL [4]	dB(A)	90,9	92,3	92,3	93,4	93,9	93,1	94
Refrigeration circuits								
Number of refrigeration circuits	#	1	1	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62
Compressors								
Number of compressors	#	1	1	2	2	2	2	2
Type	-	Inverter screw	Inverter screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw
Nominal power	HP	240	290	160/140	200/160	200/180	240/210	240/240
Fans								
Number of fans	#	10	10	12	12	14	14	16
Type	-	S3G800	S3G801	S3G802	S3G803	S3G804	S3G805	S3G806
Wheel nominal diameter	mm	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700
Power input (each)	kW	0,7	0,7	0,7	0,7	0,7	0,7	0,7
Total power input	kW	7	7	8,4	8,4	9,8	9,8	11,2
Total air flow rate	m³/h	142601	142601	171122	171122	199642	199642	228162
Evaporator								
Number of evaporators	#	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63,5	73,5	78,5
Condensing coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75
Freecooling coil								
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m²	25	25	30	30	35	35	40
Water connections								
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-
Dimensions								
Unit length	mm	7026	7026	8296	8296	9566	9566	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845

Models: FIZ***SG0Q		065	075	080	085	095	110	125
Weights								
Net weight	kg	6844	6854	8230	8830	10401	10950	11756
Operating weight	kg	7612	7622	9098	9697	11958	12535	13438

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.9 - Technical Data - FH3***SG0C

Models: FH3***SG0C		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	663	744	828	936	1033	1101	1262	1427
Compressors power input	kW	135	160	176	206	216	235	271	315
Total power input	kW	167	192	214	244	261	279	322	366
Unit EER	-	3,97	3,88	3,87	3,83	3,96	3,94	3,92	3,9
Fluid flow	m³/h	106	119	133	150	165	176	202	229
Total fluid side presure drop	kPa	113	144	132	172	149	136	160	140
Freecooling performance:									
Freecooling capacity [2]	kW	414	428	503	520	597	608	695	701
Total freecooling temperature (ZET)	°C	10	8.7	9.6	8.1	8.8	8	7.9	5.8
Unit EER at ZET point	-	21	23	22	25	23	25	25	28
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	84,4	84,5	84,9	84,9	85,1	85,2	85,4	85,5
Sound Power Level PWL [4]	dB(A)	105,9	106,0	106,8	106,8	107,5	107,5	108,1	108,2
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Total power input	kW	31,7	31,7	38,0	38,0	44,4	44,4	50,7	50,7
Total air flow rate	m³/h	238272	238272	285926	285926	333581	333581	381235	381235
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784

Models: FH3***SG0C		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.10 - Technical Data - FH3***SG0E

Models: FH3***SG0E		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	664	746	830	939	1027	1093	1266	1424
Compressors power input	kW	135	159	175	205	215	233	270	313
Total power input	kW	160	185	206	236	250	268	311	354
Unit EER	-	4,15	4,04	4,03	3,98	4,10	4,07	4,07	4,02
Fluid flow	m³/h	106	120	133	150	165	175	203	228
Total fluid side presure drop	kPa	114	145	133	173	127	138	161	137
Freecooling performance:									
Freecooling capacity [2]	kW	418	432	507	525	603	614	702	708
Total freecooling temperature (ZET)	°C	10.1	8.8	9.7	8.2	8.9	8.1	8.1	5.9
Unit EER at ZET point	-	26	29	27	31	29	31	31	35
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	78,4	78,6	78,9	79,1	79,3	79,4	79,8	80,0
Sound Power Level PWL [4]	dB(A)	99,9	100,1	100,9	101,1	101,7	101,8	102,5	102,7
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980
Power input (each)	kW	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5
Total power input	kW	25,4	25,4	30,4	30,4	35,5	35,5	40,6	40,6
Total air flow rate	m³/h	242403	242403	290883	290883	339364	339364	387844	387844
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865

Models: FH3***SG0E		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.11 - Technical Data - FH3***SG0L

Models: FH3***SG0L		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	630	702	786	883	968	1024	1186	1325
Compressors power input	kW	145	173	189	223	231	251	291	342
Total power input	kW	157	185	204	238	248	268	310	362
Unit EER	-	4,02	3,80	3,86	3,71	3,89	3,81	3,82	3,66
Fluid flow	m³/h	101	113	126	141	155	164	190	212
Total fluid side presure drop	kPa	103	129	120	153	113	123	142	119
Freecooling performance:									
Freecooling capacity [2]	kW	348	357	422	433	499	506	579	581
Total freecooling temperature (ZET)	°C	8	6,5	7,5	5,8	6,6	5,8	5,7	3,4
Unit EER at ZET point	-	52	58	53	60	57	60	61	68
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	72,4	73,1	73,4	74,1	74,2	74,5	75,2	76,0
Sound Power Level PWL [4]	dB(A)	93,9	94,6	95,4	96,1	96,6	96,9	97,9	98,7
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850
Power input (each)	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Total power input	kW	12,2	12,2	14,7	14,7	17,1	17,1	19,6	19,6
Total air flow rate	m³/h	175733	175733	210880	210880	246026	246026	281173	281173
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845

Models: FH3***SG0L		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.12 - Technical Data - FH3***SG0Q

Models: FH3***SG0Q		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	602	666	750	837	927	977	1123	1252
Compressors power input	kW	153	184	201	238	246	268	308	367
Total power input	kW	160	191	209	247	256	278	319	378
Unit EER	-	3,76	3,49	3,58	3,39	3,62	3,52	3,52	3,31
Fluid flow	m³/h	97	107	120	134	149	157	179,8	201
Total fluid side presure drop	kPa	95	117	110	139	121	109	128	109
Freecooling performance:									
Freecooling capacity [2]	kW	305	312	370	378	436	441	505	506
Total freecooling temperature (ZET)	°C	6,5	4,9	5,9	4,1	5,0	4,1	4	1,6
Unit EER at ZET point	-	86	95	89	100	95	100	100	112
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	68,2	69,1	69,3	70,2	92,6	70,6	71,2	72,2
Sound Power Level PWL [4]	dB(A)	89,7	90,6	91,3	92,2	70,2	93	93,9	94,9
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700
Power input (each)	kW	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7
Total power input	kW	7	7	8,4	8,4	9,8	9,8	11,2	11,2
Total air flow rate	m³/h	142601	142601	171122	171122	199642	199642	228162	228162
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	7026	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845

Models: FH3***SG0Q		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7540	8332	8384	10550	10980	11770	11963	11963
Operating weight	kg	8307	9159	9210	12106	12565	13437	13672	13672

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.13 - Technical Data - CH4***SG0C

Models: CH4***SG0C		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	687	774	859	974	1071	1144	1310	1471
Compressors power input	kW	130	152	168	196	206	223	258	297
Total power input	kW	159	182	203	232	248	265	306	344
Unit EER	-	4,32	4,25	4,22	4,21	4,33	4,32	4,29	4,27
Fluid flow	m³/h	99	111	124	140	154	165	189	212
Total fluid side presure drop	kPa	44	58	51	69	9	48	62	55
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	85,2	85,2	85,6	85,6	85,9	85,9	86,1	86,2
Sound Power Level PWL [4]	dB(A)	106,7	106,7	107,5	107,5	108,2	108,2	108,8	108,9
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0
Total power input	kW	29,7	29,7	35,6	35,6	41,5	41,5	47,5	47,5
Total air flow rate	m³/h	264838	264838	317805	317805	370773	370773	423740	423740
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784
Weights									
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions[1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions[1].

Tab 4.14 - Technical Data - CH4***SG0E

Models: CH4***SG0E		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	689	776	861	977	1067	1138	1315	1470
Compressors power input	kW	129	152	167	195	205	221	257	295
Total power input	kW	152	175	195	223	237	254	294	332
Unit EER	-	4,52	4,43	4,41	4,38	4,49	4,48	4,47	4,43
Fluid flow	m³/h	99	112	124	141	153	164	189	212
Total fluid side presure drop	kPa	44	58	51	70	43	50	62	53
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	77,2	77,4	77,6	77,9	78,1	78,2	78,6	78,9
Sound Power Level PWL [4]	dB(A)	98,7	98,9	99,6	99,9	100,5	100,6	101,3	101,6
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980
Power input (each)	kW	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3
Total power input	kW	23,4	23,4	28,0	28,0	32,7	32,7	37,4	37,4
Total air flow rate	m³/h	270618	270618	324742	324742	378865	378865	432989	432989
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865
Weights									
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions[1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions[1].

Tab 4.15 - Technical Data - CH4***SG0L

Models: CH4***SG0L		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	658	736	821	925	1013	1075	1243	1383
Compressors power input	kW	137	163	179	210	219	238	276	322
Total power input	kW	149	174	192	224	235	254	294	340
Unit EER	-	4,43	4,22	4,27	4,14	4,31	4,24	4,23	4,07
Fluid flow	m³/h	95	106	118	133	146	155	179	199
Total fluid side presure drop	kPa	40	53	47	63	39	45	56	47
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	71,9	72,6	72,8	73,6	73,7	74,0	74,7	75,5
Sound Power Level PWL [4]	dB(A)	93,4	94,1	94,8	95,6	96,0	96,4	97,4	98,2
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850
Power input (each)	kW	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1
Total power input	kW	11,3	11,3	13,6	13,6	15,8	15,8	18,1	18,1
Total air flow rate	m³/h	194919	194919	233902	233902	272886	272886	311870	311870
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845
Weights									
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions[1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions[1].

Tab 4.16 - Technical Data - CH4***SG0Q

Models: CH4***SG0Q		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	634	705	790	886	978	1036	1188	1321
Compressors power input	kW	144	172	188	223	232	253	291	344
Total power input	kW	151	179	196	231	241	262	301	354
Unit EER	-	4,21	3,94	4,03	3,84	4,06	3,96	3,95	3,73
Fluid flow	m³/h	91	101	114	128	141	149	171	190
Total fluid side presure drop	kPa	37	48	43	58	49	39	51	45
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	67,7	68,5	68,7	69,6	69,7	70,1	70,7	71,7
Sound Power Level PWL [4]	dB(A)	89,2	90	90,7	91,6	92,0	92,5	93,4	94,4
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700
Power input (each)	kW	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7
Total power input	kW	6,5	6,5	7,8	7,8	9	9	10,3	10,3
Total air flow rate	m³/h	158868	158868	190641	190641	222415	222415	254188	254188
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845
Weights									
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions[1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions[1].

Tab 4.17 - Technical Data - CIZ***SG0C

Models: CIZ***SG0C		065	075	080	085	095	110	125
Mechanical cooling performance [1] :								
Cooling capacity	kW	687	755	802	876	984	1142	1290
Compressors power input	kW	125	150	150	171	188	228	256
Total power input	kW	154	179	185	206	229	269	303
Unit EER	-	4,46	4,21	4,33	4,25	4,29	4,24	4,26
Fluid flow	m^3/h	99	109	115	126	142	164	186
Total fluid side presure drop	kPa	46	55	47	56	50	47	63
Sound levels								
Sound Pressure Level SPL [3]	dB(A)	85,2	85,3	85,6	85,7	85,9	85,9	86,1
Sound Power Level PWL [4]	dB(A)	106,7	106,8	107,6	107,6	108,3	108,2	108,8
Refrigeration circuits								
Number of refrigeration circuits	#	1	1	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62
Compressors								
Number of compressors	#	1	1	2	2	2	2	2
Type	-	Inverter screw	Inverter screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw
Nominal power	HP	240	290	160/140	200/160	200/180	240/210	240/240
Fans								
Number of fans	#	10	10	12	12	14	14	16
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3,0	3,0	3,0	3,0	3,0	3,0	3,0
Total power input	kW	29,7	29,7	35,6	35,6	41,5	41,5	47,5
Total air flow rate	m^3/h	264697	264697	317636	317636	370575	370575	423515
Evaporator								
Number of evaporators	#	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63,5	73,5	78,5
Condensing coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m^2	25	25	30	30	35	35	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75
Water connections								
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-
Dimensions								
Unit length	mm	7026	7026	8296	8296	9566	9566	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784
Weights								
Net weight	kg	5538	5548	6695	7295	8456	9005	9567
Operating weight	kg	5892	5902	7029	7629	9364	9940	10518

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions[1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions[1].

Tab 4.18 - Technical Data - CIZ***SG0E

Models: CIZ***SG0E		065	075	080	085	095	110	125
Mechanical cooling performance [1] :								
Cooling capacity	kW	686	757	804	878	986	1139	1294
Compressors power input	kW	124	149	149	170	187	226	254
Total power input	kW	147	172	177	198	220	259	296
Unit EER	-	4,68	4,40	4,54	4,44	4,49	4,40	4,44
Fluid flow	m^3/h	99	109	116	126	142	164	186
Total fluid side presure drop	kPa	46	55	48	57	38	53	63
Sound levels								
Sound Pressure Level SPL [3]	dB(A)	77,3	77,7	77,8	78,2	78,4	78,2	78,5
Sound Power Level PWL [4]	dB(A)	98,8	99,2	99,8	100,1	100,8	100,6	101,2
Refrigeration circuits								
Number of refrigeration circuits	#	1	1	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62
Compressors								
Number of compressors	#	1	1	2	2	2	2	2
Type	-	Inverter screw	Inverter screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw
Nominal power	HP	240	290	160/140	200/160	200/180	240/210	240/240
Fans								
Number of fans	#	10	10	12	12	14	14	16
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980
Power input (each)	kW	2,3	2,3	2,3	2,3	2,3	2,3	2,3
Total power input	kW	23,4	23,4	28	28	32,7	32,7	37,4
Total air flow rate	m^3/h	270462	274062	324555	324555	378647	378647	432739
Evaporator								
Number of evaporators	#	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63,5	73,5	78,5
Condensing coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m^2	25	25	30	30	35	35	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75
Water connections								
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-
Dimensions								
Unit length	mm	7026	7026	8296	8296	9566	9566	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865
Weights								
Net weight	kg	5538	5548	6695	7295	8456	9005	9567
Operating weight	kg	5892	5902	7029	7629	9364	9940	10518

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions[1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions[1].

Tab 4.19 - Technical Data - CIZ***SG0L

Models: CIZ***SG0L		065	075	080	085	095	110	125
Mechanical cooling performance [1] :								
Cooling capacity	kW	659	720	768	835	941	1077	1225
Compressors power input	kW	136	164	162	186	203	249	280
Total power input	kW	147	175	175	200	218	265	298
Unit EER	-	4,47	4,12	4,39	4,18	4,31	4,06	4,11
Fluid flow	m^3/h	95	104	111	120	135	155	176
Total fluid side presure drop	kPa	42	50	44	51	35	47	57
Sound levels								
Sound Pressure Level SPL [3]	dB(A)	72,8	74,1	73,7	74,7	74,8	74,1	74,6
Sound Power Level PWL [4]	dB(A)	94,3	95,6	95,7	96,6	97,2	96,5	97,4
Refrigeration circuits								
Number of refrigeration circuits	#	1	1	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62
Compressors								
Number of compressors	#	1	1	2	2	2	2	2
Type	-	Inverter screw	Inverter screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw
Nominal power	HP	240	290	160/140	200/160	200/180	240/210	240/240
Fans								
Number of fans	#	10	10	12	12	14	14	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850
Power input (each)	kW	1,1	1,1	1,1	1,1	1,1	1,1	1,1
Total power input	kW	11,3	11,3	13,6	13,6	15,8	15,8	18,1
Total air flow rate	m^3/h	194829	194829	233795	233795	272760	272760	311726
Evaporator								
Number of evaporators	#	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63,5	73,5	78,5
Condensing coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m^2	25	25	30	30	35	35	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75
Water connections								
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-
Dimensions								
Unit length	mm	7026	7026	8296	8296	9566	9566	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845
Weights								
Net weight	kg	5538	5548	6695	7295	8456	9005	9567
Operating weight	kg	5892	5902	7029	7629	9364	9940	10518

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions[1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions[1].

Tab 4.20 - Technical Data - CIZ***SG0Q

Models: CIZ***SG0Q		065	075	080	085	095	110	125
Mechanical cooling performance [1] :								
Cooling capacity	kW	635	692	741	801	907	1035	1172
Compressors power input	kW	146	176	172	200	216	270	302
Total power input	kW	153	183	180	208	225	279	312
Unit EER	-	4,16	3,79	4,12	3,85	4,03	3,71	3,75
Fluid flow	m^3/h	91	100	107	115	131	149	169
Total fluid side presure drop	kPa	39	47	41	47	43	39	52
Sound levels								
Sound Pressure Level SPL [3]	dB(A)	68,9	70,4	69,9	71,0	71,1	70,3	70,9
Sound Power Level PWL [4]	dB(A)	90,4	91,9	91,8	93,0	93,5	92,7	93,6
Refrigeration circuits								
Number of refrigeration circuits	#	1	1	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62
Compressors								
Number of compressors	#	1	1	2	2	2	2	2
Type	-	Inverter screw	Inverter screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw
Nominal power	HP	240	290	160/140	200/160	200/180	240/210	240/240
Fans								
Number of fans	#	10	10	12	12	14	14	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700
Power input (each)	kW	0,7	0,7	0,7	0,7	0,7	0,7	0,7
Total power input	kW	6,5	6,5	7,8	7,8	9	9	10,3
Total air flow rate	m^3/h	158799	158799	190559	190559	222318	222318	254078
Evaporator								
Number of evaporators	#	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63,5	73,5	78,5
Condensing coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m^2	25	25	30	30	35	35	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75
Water connections								
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-
Dimensions								
Unit length	mm	7026	7026	8296	8296	9566	9566	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845
Weights								
Net weight	kg	5538	5548	6695	7295	8456	9005	9567
Operating weight	kg	5892	5902	7029	7629	9364	9940	10518

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions[1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions[1].

Tab 4.21 - Technical Data - CH3***SG0C

Models: CH3***SG0C		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	682	767	853	966	1062	1133	1300	1472
Compressors power input	kW	133	158	174	203	213	231	267	309
Total power input	kW	163	187	209	239	256	272	314	356
Unit EER	-	4,18	4,1	4,08	4,05	4,17	4,16	4,14	4,12
Fluid flow	m³/h	98	110	123	139	153	163	187	212
Total fluid side presure drop	kPa	98	57	51	68	58	47	61	55
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	85,2	85,2	85,6	85,7	85,9	85,9	86,1	86,2
Sound Power Level PWL [4]	dB(A)	106,7	106,7	107,5	107,6	108,2	108,2	108,8	108,9
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0
Total power input	kW	29,7	29,7	35,6	35,6	41,5	41,5	47,5	47,5
Total air flow rate	m³/h	264697	264697	317636	317636	370575	370575	423515	423515
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784
Weights									
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions[1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions[1].

Tab 4.22 - Technical Data - CH3***SG0E

Models: CH3***SG0E		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	684	770	856	969	1059	1127	1305	1471
Compressors power input	kW	133	157	173	202	212	229	266	307
Total power input	kW	156	180	201	230	244	262	303	344
Unit EER	-	4,38	4,27	4,26	4,21	4,33	4,31	4,30	4,27
Fluid flow	m³/h	98	111	123	139	152	162	188	212
Total fluid side presure drop	kPa	44	57	51	69	42	49	61	53
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	77,2	77,4	77,7	77,9	78,2	78,3	78,7	79,0
Sound Power Level PWL [4]	dB(A)	98,7	98,9	99,7	99,9	100,6	100,7	101,4	101,7
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980
Power input (each)	kW	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3
Total power input	kW	23,4	23,4	28,0	28,0	32,7	32,7	37,4	37,4
Total air flow rate	m³/h	270462	270462	324555	324555	378647	378647	432739	432739
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865
Weights									
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions[1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions[1].

Tab 4.23 - Technical Data - CH3***SG0L

Models: CH3***SG0L		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	651	727	813	915	1002	1060	1228	1376
Compressors power input	kW	142	169	186	218	227	246	285	334
Total power input	kW	153	180	199	232	243	262	303	352
Unit EER	-	4,24	4,03	4,08	3,94	4,12	4,05	4,05	3,90
Fluid flow	m³/h	94	105	117	132	144	153	177	198
Total fluid side presure drop	kPa	40	51	46	61	38	44	55	47
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	72,1	72,8	73,0	73,8	73,9	74,2	74,8	75,7
Sound Power Level PWL [4]	dB(A)	93,6	94,3	95,0	95,8	96,2	96,6	97,5	98,4
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850
Power input (each)	kW	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1
Total power input	kW	11,3	11,3	13,6	13,6	15,8	15,8	18,1	18,1
Total air flow rate	m³/h	194829	194829	233795	233795	272760	272760	311726	311726
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845
Weights									
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions[1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions[1].

Tab 4.24 - Technical Data - CH3***SG0Q

Models: CH3***SG0Q		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	625	693	780	873	963	1018	1169	1308
Compressors power input	kW	150	179	196	232	240	261	300	357
Total power input	kW	156	186	204	240	249	270	311	367
Unit EER	-	4,01	3,74	3,83	3,64	3,86	3,77	3,76	3,56
Fluid flow	m³/h	90	100	112	126	139	146	168	188
Total fluid side presure drop	kPa	37	47	42	56	48	38	50	44
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	67,8	68,7	68,9	69,8	69,8	70,3	70,9	71,9
Sound Power Level PWL [4]	dB(A)	89,3	90,2	90,9	91,8	92,2	92,7	93,6	94,6
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700
Power input (each)	kW	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7
Total power input	kW	6,5	6,5	7,8	7,8	9	9	10,3	10,3
Total air flow rate	m³/h	158799	158799	190559	190559	222318	222318	254078	254078
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845
Weights									
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions[1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions[1].

Tab 4.25 - Technical Data - NH4***SG0C

Models: NH4***SG0C		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	677	761	846	957	1053	1123	1287	1442
Compressors power input	kW	132	156	172	201	211	229	264	306
Total power input	kW	164	188	210	239	255	272	315	357
Unit EER	-	4,13	4,05	4,03	4,01	4,13	4,11	4,08	4,05
Fluid flow	m³/h	97	109	122	138	152	162	185	208
Total fluid side presure drop	kPa	125	158	107	139	119	116	138	150
Freecooling performance:									
Freecooling capacity [2]	kW	363	372	448	460	531	538	618	631
Total freecooling temperature (ZET)	°C	7,9	6,2	7,7	5,9	6,8	5,9	5,9	4
Unit EER at ZET point	-	16	18	16	18	18	19	18	20
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	84,3	84,4	84,7	84,8	85,0	85,1	85,3	85,4
Sound Power Level PWL [4]	dB(A)	105,8	105,9	106,6	106,7	107,5	107,4	108,0	108,1
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Total power input	kW	31,8	31,8	38,2	38,2	44,6	44,6	50,9	50,9
Total air flow rate	m³/h	236043	236043	283251	283251	330460	330460	377668	377668
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1418
Fluid volume (internal glycol circuit)	l	499	499	563	563	759	759	894	1066
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784

Models: NH4***SG0C		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.26 - Technical Data - NH4***SG0E

Models: NH4***SG0E		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	678	763	848	960	1049	1117	1290	1441
Compressors power input	kW	132	155	171	200	209	227	263	304
Total power input	kW	157	181	202	231	245	262	304	344
Unit EER	-	4,31	4,22	4,21	4,16	4,28	4,25	4,25	4,18
Fluid flow	m³/h	98	110	122	138	151	161	186	207
Total fluid side presure drop	kPa	125	158	108	140	103	117	139	148
Freecooling performance:									
Freecooling capacity [2]	kW	367	376	453	465	537	544	625	638
Total freecooling temperature (ZET)	°C	8,0	6,3	7.8	6,1	6,9	6	6,1	4,2
Unit EER at ZET point	-	19	21	19	21	21	22	21	24
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	78,7	78,8	79,1	79,3	79,5	79,6	80,0	80,2
Sound Power Level PWL [4]	dB(A)	100,2	100,3	101,1	101,3	101,9	102,0	102,7	102,9
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980
Power input (each)	kW	2,6	2,6	2,6	2,6	2,6	2,6	2,6	2,6
Total power input	kW	25,5	25,5	30,6	30,6	35,7	35,7	40,8	40,8
Total air flow rate	m³/h	240117	240117	288140	288140	336164	336164	384187	384187
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1418
Fluid volume (internal glycol circuit)	l	499	499	563	563	759	759	894	1066
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865

Models: NH4***SG0E		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.27 - Technical Data - NH4***SG0L

Models: NH4***SG0L		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	645	719	804	904	991	1049	1213	1347
Compressors power input	kW	141	168	184	217	226	245	284	333
Total power input	kW	153	181	199	232	243	262	304	353
Unit EER	-	4,21	3,99	4,05	3,90	4,08	4,00	4,00	3,82
Fluid flow	m³/h	93	104	116	130	142	151	175	194
Total fluid side presure drop	kPa	114	142	97	125	93	104	124	130
Freecooling performance:									
Freecooling capacity [2]	kW	305	311	375	383	443	448	514	528
Total freecooling temperature (ZET)	°C	5,6	3,9	5,2	3,4	4,4	3,5	3,5	1,7
Unit EER at ZET point	-	28	31	27	31	30	32	31	34
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	72,4	73,1	73,3	74,1	74,2	74,5	75,1	75,9
Sound Power Level PWL [4]	dB(A)	93,9	94,6	95,3	96,1	96,5	96,9	97,8	98,6
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850
Power input (each)	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Total power input	kW	12,3	12,3	14,8	14,8	17,3	17,3	19,7	19,7
Total air flow rate	m³/h	173722	173722	208467	208467	243211	243211	277956	277956
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1418
Fluid volume (internal glycol circuit)	l	499	499	563	563	759	759	894	1066
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845

Models: NH4***SG0L		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.28 - Technical Data - NH4***SG0Q

Models: NH4***SG0Q		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	618	684	769	860	950	1003	1151	1276
Compressors power input	kW	149	179	195	232	241	262	301	359
Total power input	kW	156	186	204	241	251	272	313	370
Unit EER	-	3.95	3.68	3.78	3.57	3.79	3.68	3.68	3.45
Fluid flow	m³/h	89	98	111	124	137	144	166	184
Total fluid side presure drop	kPa	105	129	89	113	98	94	112	119
Freecooling performance:									
Freecooling capacity [2]	kW	270	274	330	337	391	394	453	459
Total freecooling temperature (ZET)	°C	4	2,3	3,5	1,7	2,7	1,8	1,8	0
Unit EER at ZET point	-	34	38	33	37	38	40	37	41
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	68.2	69.1	69.2	70.1	70.1	70.5	71.1	72.1
Sound Power Level PWL [4]	dB(A)	89.7	90.6	91.2	92.1	92.5	92.9	93.8	94.8
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700
Power input (each)	kW	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total power input	kW	7.1	7.1	8.5	8.5	9.9	9.9	11.3	11.3
Total air flow rate	m³/h	140579	140579	168694	168694	196810	196810	224926	224926
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	599	1144	1144	1218	1218
Fluid volume (internal glycol circuit)	l	499	499	599	599	759	759	894	894
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845

Models: NH4***SG0Q		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.29 - Technical Data - NIZ***SG0C

Models: NIZ***SG0C		065	075	080	085	095	110	125
Mechanical cooling performance [1] :								
Cooling capacity	kW	677	743	790	862	970	1121	1267
Compressors power input	kW	129	154	154	176	193	235	264
Total power input	kW	160	186	192	214	237	280	315
Unit EER	-	4,23	3,99	4,12	4,02	4,09	4,01	4,03
Fluid flow	m³/h	97	107	114	124	140	161	182
Total fluid side presure drop	kPa	127	151	97	114	102	115	137
Freecooling performance:								
Freecooling capacity [2]	kW	363	370	441	450	522	538	615
Total freecooling temperature (ZET)	°C	7,9	6,6	8,6	7,4	7,9	5,9	6,2
Unit EER at ZET point	-	16	17	15	16	16	19	18
Sound levels								
Sound Pressure Level SPL [3]	dB(A)	84,4	84,5	84,8	84,8	85,1	85,1	85,3
Sound Power Level PWL [4]	dB(A)	105,9	106,0	106,7	106,8	107,4	107,4	108,0
Refrigeration circuits								
Number of refrigeration circuits	#	1	1	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62
Compressors								
Number of compressors	#	1	1	2	2	2	2	2
Type	-	Inverter screw	Inverter screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw
Nominal power	HP	240	290	160/140	200/160	200/180	240/210	240/240
Fans								
Number of fans	#	10	10	12	12	14	14	16
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Total power input	kW	31,8	31,8	38,2	38,2	44,6	44,6	50,9
Total air flow rate	m³/h	235932	235932	283119	283119	330305	330305	377492
Evaporator								
Number of evaporators	#	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63,5	73,5	78,5
Condensing coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75
Freecooling coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40
Water connections								
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218
Fluid volume (internal glycol circuit)	l	499	499	563	563	759	759	894
Dimensions								
Unit length	mm	7026	7026	8296	8296	9566	9566	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784

Models: NIZ***SG0C		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423
Operating weight	kg	8664	8696	9816,11	9867,11	12938	13398	14300	14535

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.30 - Technical Data - NIZ***SG0E

Models: NIZ***SG0E		065	075	080	085	095	110	125
Mechanical cooling performance [1] :								
Cooling capacity	kW	679	745	792	864	971	1118	1271
Compressors power input	kW	128	154	153	175	192	234	262
Total power input	kW	153	179	184	206	228	269	303
Unit EER	-	4,43	4,16	4,31	4,20	4,27	4,15	4,19
Fluid flow	m³/h	98	107	114	124	140	161	183
Total fluid side presure drop	kPa	127	151	97	115	90	120	138
Freecooling performance:								
Freecooling capacity [2]	kW	367	374	445	455	527	544	623
Total freecooling temperature (ZET)	°C	8	6,7	8,7	7,5	8,1	6	6,3
Unit EER at ZET point	-	19	20	17	19	19	22	21
Sound levels								
Sound Pressure Level SPL [3]	dB(A)	78,8	79,1	79,3	79,5	79,8	79,6	79,9
Sound Power Level PWL [4]	dB(A)	100,3	100,6	101,3	101,5	102,2	102,0	102,6
Refrigeration circuits								
Number of refrigeration circuits	#	1	1	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62
Compressors								
Number of compressors	#	1	1	2	2	2	2	2
Type	-	Inverter screw	Inverter screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw
Nominal power	HP	240	290	160/140	200/160	200/180	240/210	240/240
Fans								
Number of fans	#	10	10	12	12	14	14	16
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980
Power input (each)	kW	2,6	2,6	2,6	2,6	2,6	2,6	2,6
Total power input	kW	25,5	25,5	30,6	30,6	35,7	35,7	40,8
Total air flow rate	m³/h	240003	240003	288004	288004	336004	336004	384005
Evaporator								
Number of evaporators	#	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63,5	73,5	78,5
Condensing coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75
Freecooling coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40
Water connections								
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218
Fluid volume (internal glycol circuit)	l	499	499	563	563	759	759	894
Dimensions								
Unit length	mm	7026	7026	8296	8296	9566	9566	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865

Models: NIZ***SG0E		065	075	080	090	100	110	125
Weights								
Net weight	kg	7044	7054	8640	9240	10887	11435	12216
Operating weight	kg	8000	8010	9699	10299	12791	13367	14350

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.31 - Technical Data - NIZ***SG0L

Models: NIZ***SG0L		065	075	080	085	095	110	125
Mechanical cooling performance [1] :								
Cooling capacity	kW	646	705	753	817	923	1051	1196
Compressors power input	kW	142	170	167	194	210	260	292
Total power input	kW	154	183	182	209	227	277	311
Unit EER	-	4,20	3,86	4,14	3,92	4,07	3,79	3,84
Fluid flow	m³/h	93	101	108	118	133	151	172
Total fluid side presure drop	kPa	116	137	88	103	82	107	123
Freecooling performance:								
Freecooling capacity [2]	kW	305	310	370	376	437	447	513
Total freecooling temperature (ZET)	°C	5,6	4,2	6,2	5	5,5	3,5	3,7
Unit EER at ZET point	-	28	30	25	28	28	32	30
Sound levels								
Sound Pressure Level SPL [3]	dB(A)	73,4	74,6	74,2	75,2	75,4	74,6	75,2
Sound Power Level PWL [4]	dB(A)	94,9	96,1	96,2	97,2	97,7	97,0	97,9
Refrigeration circuits								
Number of refrigeration circuits	#	1	1	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62
Compressors								
Number of compressors	#	1	1	2	2	2	2	2
Type	-	Inverter screw	Inverter screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw
Nominal power	HP	240	290	160/140	200/160	200/180	240/210	240/240
Fans								
Number of fans	#	10	10	12	12	14	14	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850
Power input (each)	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Total power input	kW	12,3	12,3	14,8	14,8	17,3	17,3	19,7
Total air flow rate	m³/h	173654	173654	208385	208385	243116	243116	277847
Evaporator								
Number of evaporators	#	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63,5	73,5	78,5
Condensing coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75
Freecooling coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40
Water connections								
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218
Fluid volume (internal glycol circuit)	l	499	499	563	563	759	759	894
Dimensions								
Unit length	mm	7026	7026	8296	8296	9566	9566	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845

Models: NIZ***SG0L		065	075	080	090	100	110	125
Weights								
Net weight	kg	7044	7054	8640	9240	10887	11435	12216
Operating weight	kg	8000	8010	9699	10299	12791	13367	14350

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.32 - Technical Data - NIZ***SG0Q

Models: NIZ***SG0Q		065	075	080	085	095	110	125
Mechanical cooling performance [1] :								
Cooling capacity	kW	618	672	721	778	883	1002	1135
Compressors power input	kW	154	185	180	210	225	283	317
Total power input	kW	161	192	188	218,6	235	293	329
Unit EER	-	3,85	3,50	3,84	3,56	3,75	3,41	3,45
Fluid flow	m³/h	89	97	104	112	127	144	163
Total fluid side presure drop	kPa	107	125	81	94	85	93	111
Freecooling performance:								
Freecooling capacity [2]	kW	270	274	326	331	386	394	451
Total freecooling temperature (ZET)	°C	4	2,6	4,5	3,3	3,8	1,8	2,0
Unit EER at ZET point	-	34	37	31	33	35	40	37
Sound levels								
Sound Pressure Level SPL [3]	dB(A)	69,6	71,0	70,5	71,7	71,7	70,9	71,4
Sound Power Level PWL [4]	dB(A)	91,1	92,5	92,4	93,6	94,0	93,3	94,2
Refrigeration circuits								
Number of refrigeration circuits	#	1	1	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62
Compressors								
Number of compressors	#	1	1	2	2	2	2	2
Type	-	Inverter screw	Inverter screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw	Inverter screw/ Screw
Nominal power	HP	240	290	160/140	200/160	200/180	240/210	240/240
Fans								
Number of fans	#	10	10	12	12	14	14	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700
Power input (each)	kW	0,7	0,7	0,7	0,7	0,7	0,7	0,7
Total power input	kW	7,1	7,1	8,5	8,5	9,9	9,9	11,3
Total air flow rate	m³/h	140528	140528	168634	168634	196739	196739	224845
Evaporator								
Number of evaporators	#	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63,5	73,5	78,5
Condensing coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75
Freecooling coil								
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40
Water connections								
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218
Fluid volume (internal glycol circuit)	l	499	499	563	563	759	759	894
Dimensions								
Unit length	mm	7026	7026	8296	8296	9566	9566	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845

Models: NIZ***SG0Q		065	075	080	090	100	110	125
Weights								
Net weight	kg	7044	7054	8640	9240	10887	11435	12216
Operating weight	kg	8000	8010	9699	10299	12791	13367	14350

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.33 - Technical Data - NH3***SG0C

Models: NH3***SG0C		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	671	753	839	948	1043	1111	1275	1440
Compressors power input	kW	136	161	178	208	218	236	273	318
Total power input	kW	168	193	216	246	262	281	324	369
Unit EER	-	3,99	3,90	3,89	3,85	3,97	3,95	3,93	3,9
Fluid flow	m³/h	97	108	121	136	150	160	183	207
Total fluid side presure drop	kPa	123	155	105	137	117	113	136	149
Freecooling performance:									
Freecooling capacity [2]	kW	362	371	447	459	530	537	617	631
Total freecooling temperature (ZET)	°C	8,0	6,4	7,8	6	6,9	6	6,1	4,1
Unit EER at ZET point	-	16	18	16	18	17	19	18	20
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	84,3	84,4	84,8	84,8	85,0	85,1	85,3	85,4
Sound Power Level PWL [4]	dB(A)	105,8	105,9	106,7	106,7	107,4	107,4	108,0	108,1
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Total power input	kW	31,8	31,8	38,2	38,2	44,6	44,6	50,9	50,9
Total air flow rate	m³/h	235932	235932	283119	283119	330305	330305	377492	377492
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1418
Fluid volume (internal glycol circuit)	l	499	499	563	563	759	759	894	1066
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784

Models: NH3***SG0C		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.34 - Technical Data - NH3***SG0E

Models: NH3***SG0E		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	673	755	841	951	1040	1105	1279	1439
Compressors power input	kW	136	161	177	207	217	235	272	316
Total power input	kW	161	186	208	238	252	270	313	357
Unit EER	-	4,17	4,05	4,05	4,00	4,12	4,09	4,09	4,03
Fluid flow	m³/h	97	109	121	137	150	159	184	207
Total fluid side presure drop	kPa	123	155	106	137	101	115	137	147
Freecooling performance:									
Freecooling capacity [2]	kW	366	375	452	464	536	543	624	638
Total freecooling temperature (ZET)	°C	8,1	6,5	7,9	6,2	7,1	6,2	6,2	4,2
Unit EER at ZET point	-	18	21	19	21	20	22	21	24
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	78,7	78,9	79,1	79,3	79,5	79,6	80,0	80,3
Sound Power Level PWL [4]	dB(A)	100,2	100,4	101,1	101,3	101,9	102,0	102,7	103,0
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980
Power input (each)	kW	2,6	2,6	2,6	2,6	2,6	2,6	2,6	2,6
Total power input	kW	25,5	25,5	30,6	30,6	35,7	35,7	40,8	40,8
Total air flow rate	m³/h	240003	240003	288004	288004	336004	336004	384005	384005
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1418
Fluid volume (internal glycol circuit)	l	499	499	563	563	759	759	894	1066
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865

Models: NH3***SG0E		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.35 - Technical Data - NH3***SG0L

Models: NH3***SG0L		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	637	709	795	892	978	1033	1196	1336
Compressors power input	kW	146	174	191	226	234	254	293	346
Total power input	kW	158	187	206	240	251	271	313	366
Unit EER	-	4,02	3,79	3,86	3,71	3,90	3,81	3,82	3,65
Fluid flow	m³/h	92	102	114	128	141	149	172	192
Total fluid side presure drop	kPa	111	138	95	122	90	101	121	128
Freecooling performance:									
Freecooling capacity [2]	kW	304	310	374	382	442	446	513	522
Total freecooling temperature (ZET)	°C	5,8	4,2	5,4	3,6	4,6	3,7	3,7	1,8
Unit EER at ZET point	-	27	30	27	30	30	32	30	34
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	72,6	73,3	73,5	74,3	74,3	74,6	75,3	76,1
Sound Power Level PWL [4]	dB(A)	94,1	94,8	95,5	96,3	96,7	97,0	98,0	98,8
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850
Power input (each)	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Total power input	kW	12,3	12,3	14,8	14,8	17,3	17,3	19,7	19,7
Total air flow rate	m³/h	173654	173654	208385	208385	243116	243116	277847	277847
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1418
Fluid volume (internal glycol circuit)	l	499	499	563	563	759	759	894	1066
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845

Models: NH3***SG0L		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.36 - Technical Data - NH3***SG0Q

Models: NH3***SG0Q		065	075	080	090	100	110	125	140
Mechanical cooling performance [1] :									
Cooling capacity	kW	608	671	757	844	933	982	1129	1258
Compressors power input	kW	155	186	204	242	249	271	311	371
Total power input	kW	162	193	212	250	259	281	323	383
Unit EER	-	3,75	3,47	3,57	3,38	3,60	3,50	3,50	3,29
Fluid flow	m³/h	87	97	109	122	134	141	163	181
Total fluid side presure drop	kPa	102	125	87	110	95	90	108	116
Freecooling performance:									
Freecooling capacity [2]	kW	269	274	329	336	390	393	451	458
Total freecooling temperature (ZET)	°C	4,2	2,7	3,7	2,0	3,0	2,1	2,1	0,2
Unit EER at ZET point	-	34	37	32	36	37	39	36	41
Sound levels									
Sound Pressure Level SPL [3]	dB(A)	68,4	69,2	69,4	70,3	70,3	70,7	71,3	72,3
Sound Power Level PWL [4]	dB(A)	89,9	90,7	91,4	92,3	92,7	93,1	94,0	95
Refrigeration circuits									
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72
Compressors									
Number of compressors	#	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	210/180	210/210	240/240	280/280
Fans									
Number of fans	#	10	10	12	12	14	14	16	16
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700
Power input (each)	kW	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7
Total power input	kW	7,1	7,1	8,5	8,5	9,9	9,9	11,3	11,3
Total air flow rate	m³/h	140528	140528	168634	168634	196739	196739	224845	224845
Evaporator									
Number of evaporators	#	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43,5	47	51	55	63,5	73,5	73,5	88,5
Condensing coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Internal volume (each)	l	8,8	8,8	8,8	8,8	8,75	8,75	8,75	8,75
Freecooling coil									
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40
Water connections									
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1418
Fluid volume (internal glycol circuit)	l	499	499	563	563	759	759	894	1066
Dimensions									
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845

Models: NH3***SG0Q		065	075	080	090	100	110	125	140
Weights									
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535

Notes:
(1) : 35°C ambient temperature; 26-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 26°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions(1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions(1).

Tab 4.37 - Technical Data - FH4***HG0C

Models: FH4***HG0C		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	683	770	856	967	1069	1142	1311	1467	1683	1832	1980
Compressors power input	kW	132	157	172	201	212	229	266	307	349	418	455
Total power input	kW	164	188	210	239	256	274	316	358	406	481	518
Unit EER	-	4.16	4.09	4.08	4.04	4.18	4.17	4.14	4.1	4.14	3.81	3.82
Fluid flow	m^3/h	73	82	92	103	114	122	140	157	180	196	212
Total fluid side presure drop	kPa	134	170	157	173	184	176	195	175	175	162	162
Freecooling performance:												
Freecooling capacity [2]	kW	501	522	611	636	729	746	853	867	980	1082	1106
Total freecooling temperature (ZET)	°C	11,3	9,9	10,8	9,3	10	9,1	9,1	7,1	6.8	7,1	5,9
Unit EER at ZET point	-	21	24	23	25	24	26	26	29	30	29	31
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	84.4	84.5	84.8	84.9	85.1	85.2	85.4	85.5	85.7	85.9	86.0
Sound Power Level PWL [4]	dB(A)	105.9	106.0	106.7	106.8	107.5	107.5	108.1	108.2	108.7	109.2	109.3
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65	81/73	89/81	89/81
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Total power input	kW	32	32	38	38	44.4	44.4	50.7	50.7	57	63.4	63.4
Total air flow rate	m^3/h	238384	238384	286061	286061	333738	333738	381415	381415	429092	476768	476768
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m^2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m^2	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709	1894	1937	1937
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784	2784	2784	2784

Models: FH4***HG0C		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963	13280	14247	14320
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672	15174	16184	16257

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [(1)];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [(1)].

Tab 4.38 - Technical Data - FH4***HG0E

Models: FH4***HG0E		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	685	772	859	969	1072	1145	1314	1472	1688	1838	1986
Compressors power input	kW	132	156	172	200	211	229	265	306	348	416	453
Total power input	kW	157	181	202	231	246	264	305	346	393	467	504
Unit EER	-	4.35	4.26	4.25	4.2	4.35	4.34	4.31	4.25	4.29	3.94	3.94
Fluid flow	m³/h	73.2	83	92	104	115	122	140	157	180	196	212
Total fluid side presure drop	kPa	134	171	158	173	185	177	196	176	176	163	163
Freecooling performance:												
Freecooling capacity [2]	kW	505	527	616	642	736	753	862	875	989	1092	1117
Total freecooling temperature (ZET)	°C	11,4	10	10,9	9,4	10,1	9,3	9,2	7,2	6,9	7,2	6
Unit EER at ZET point	-	27	31	28	32	30	32	32	36	37	36	39
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	78.4	78.6	78.8	79	79.3	79.4	79.7	80.0	80.2	80.6	80.8
Sound Power Level PWL [4]	dB(A)	99.9	100.1	100.8	101	101.7	101.8	102.4	102.7	103.3	104.0	104.2
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65	81/73	89/81	89/81
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980	980	980	980
Power input (each)	kW	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Total power input	kW	25	25.3	30.4	30.4	35.5	35.5	40.5	40.5	45.6	50.7	50.7
Total air flow rate	m³/h	242520	242520	291024	291024	339528	339528	388032	388032	436536	485039	485039
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709	1894	1937	1937
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865

Models: FH4***HG0E		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963	13280	14247	14320
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672	15174	16184	16257

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [(1)];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [(1)].

Tab 4.39 - Technical Data - FH4***HG0L

Models: FH4***HG0L		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	652	729	815	914	1013	1076	1236	1376	1576	1716	1857
Compressors power input	kW	141	169	184	217	227	247	285	336	382	452	496
Total power input	kW	153	181	199	232	244	264	305	355	404	477	520
Unit EER	-	4.25	4.03	4.1	3.94	4.15	4.07	4.06	3.88	3.90	3.60	3.57
Fluid flow	m³/h	70	78	87	98	108	115	132	147	168	183	198
Total fluid side presure drop	kPa	123	153	143	156	166	158	175	155	155	143	144
Freecooling performance:												
Freecooling capacity [2]	kW	427	442	519	537	617	628	719	727	820	907	925
Total freecooling temperature (ZET)	°C	9,2	7,7	8,7	7	7,8	6,9	6,8	4,6	4,2	4,6	3,2
Unit EER at ZET point	-	54	61	55	62	59	63	63	70	72	70	76
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	72.3	73	73.3	74	74.1	74.5	75.1	75.9	76.4	77.1	77.7
Sound Power Level PWL [4]	dB(A)	93.8	94.5	95.3	96	96.5	96.9	97.8	98.6	99.5	100.5	101.1
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65	81/73	89/81	89/81
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850	850	850	850
Power input (each)	kW	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Total power input	kW	12	12	14.7	14.7	17.1	17.1	19.6	19.6	22	24.5	24.5
Total air flow rate	m³/h	175803	175803	210963	210963	246124	246124	281284	281284	316445	351605	351605
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709	1894	1937	1937
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845

Models: FH4***HG0L		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963	13280	14247	14320
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672	15174	16184	16257

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions (1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions (1).

Tab 4.40 - Technical Data - FH4***HG0Q

Models: FH4***HG0Q		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	625	694	781	871	966	1021	1175	1301	1488	1619	1827
Compressors power input	kW	149	179	196	232	241	263	303	360	411	484	506
Total power input	kW	156	186	204	241	251	273	314	372	423	498	527
Unit EER	-	4	3.72	3.83	3.62	3.85	3.74	3.74	3.5	3.52	3.25	3.47
Fluid flow	m^3/h	67	74	83	93	103	109	125	139	159	173	195
Total fluid side presure drop	kPa	113	140	132	142	152	143	159	140	139	129	139
Freecooling performance:												
Freecooling capacity [2]	kW	378	389	459	472	544	552	631	636	718	794	888
Total freecooling temperature (ZET)	°C	7,7	6	7,1	5,3	6,1	5,2	5,0	2,7	2,4	2,8	2,6
Unit EER at ZET point	-	89	99	93	104	99	104	105	116	117	115	89
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	68.1	69	69.1	70	70.1	70.5	71.1	72.1	72.6	73.4	74.3
Sound Power Level PWL [4]	dB(A)	89.6	90.5	91.1	92	92.5	92.9	93.8	94.8	95.7	96.8	97.7
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65	81/73	89/81	89/81
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700	700	700	700
Power input (each)	kW	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total power input	kW	7	7	8.4	8.4	9.8	9.8	11.2	11.2	12.7	14.1	20.5
Total air flow rate	m^3/h	142654	142654	171184	171184	199715	199715	228246	228246	256777	285307	329461
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m^2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	#/mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m^2	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709	1894	1937	1937
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845

Models: FH4***HG0Q		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963	13280	14247	14320
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672	15174	16184	16257

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [(1)];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [(1)].

Tab 4.41 - Technical Data - FIZ***HG0C

Models: FIZ***HG0C		065	075	080	085	095	110	125	140	150
Mechanical cooling performance [1] :										
Cooling capacity	kW	687	753	801	874	985	1146	1292	1428	1582
Compressors power input	kW	129	155	154	176	193	236	265	290	324
Total power input	kW	160	186	192	214	238	281	315	347	388
Unit EER	-	4.28	4.04	4.17	4.08	4.15	4.08	4.10	4.12	4.08
Fluid flow	m³/h	73	80	86	93	105	122	138	153	169
Total fluid side presure drop	kPa	138	163	149	170	154	182	173	169	194
Freecooling performance:										
Freecooling capacity [2]	kW	502	518	595	615	709	740	849	949	1054
Total freecooling temperature (ZET)	°C	11,2	10,2	11,5	10,6	11	9,1	9,3	9,5	9,5
Unit EER at ZET point	-	22	24	21	23	22	26	25	25	25
Sound levels										
Sound Pressure Level SPL [3]	dB(A)	84.5	84.6	84.9	84.9	85.2	85.2	85.4	85.6	85.8
Sound Power Level PWL [4]	dB(A)	106	106.1	106.8	106.9	107.5	107.5	108.1	108.6	109.1
Refrigeration circuits										
Number of refrigeration circuits	#	1	1	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62	79/70	86/77
Compressors										
Number of compressors	#	1	1	2	2	2	2	2	2	2
Type	-	Inverter Screw	Inverter Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw
Nominal power	HP	240	290	160/140	200/160	180/200	210/240	240/240	290/280	290/320
Fans										
Number of fans	#	10	10	12	12	14	14	16	18	20
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Total power input	kW	31.7	31.7	38	38	44.4	44.4	50.7	57.0	63.4
Total air flow rate	m³/h	238272	238272	285926	285926	333581	333581	381235	428890	476544
Evaporator										
Number of evaporators	#	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63.5	73.5	78.5	115	129
Condensing coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	45	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.75	8.75	8.75	8.8	8.8
Freecooling coil										
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	# / mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m2	25	25	30	30	35	35	40	45	50
Water connections										
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1894	1937
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-
Dimensions										
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784	2784

Models: FIZ***HG0C		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963	13280	14247	14320
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672	15174	16184	16257

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [(1)];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [(1)].

Tab 4.42 - Technical Data - FIZ***HG0E

Models: FIZ***HG0E		065	075	080	085	095	110	125	140	150
Mechanical cooling performance [1] :										
Cooling capacity	kW	688	754	803	876	987	1149	1295	1432	1586
Compressors power input	kW	128	154	153	175	192	235	263	288	323
Total power input	kW	153	179	184	206	228	271	304	334	374
Unit EER	-	4.49	4.21	4.37	4.26	4.33	4.25	4.26	4.29	4.24
Fluid flow	m³/h	74	81	86	94	105	123	138	153	169
Total fluid side presure drop	kPa	138	163	150	171	154	183	174	171	195
Freecooling performance:										
Freecooling capacity [2]	kW	506	523	600	620	715	746	856	958	1063
Total freecooling temperature (ZET)	°C	11,3	10,3	11,6	10,7	11,1	9,2	9,4	9,6	9,7
Unit EER at ZET point	-	27	30	26	29	28	32	32	31	31
Sound levels										
Sound Pressure Level SPL [3]	dB(A)	78.6	78.9	79	79.3	79.5	79.3	79.7	79.8	80.1
Sound Power Level PWL [4]	dB(A)	100.1	100.4	101	101.3	101.9	101.7	102.4	102.9	103.5
Refrigeration circuits										
Number of refrigeration circuits	#	1	1	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62	79/70	86/77
Compressors										
Number of compressors	#	1	1	2	2	2	2	2	2	2
Type	-	Inverter Screw	Inverter Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw
Nominal power	HP	240	290	160/140	200/160	180/200	210/240	240/240	290/280	290/320
Fans										
Number of fans	#	10	10	12	12	14	14	16	18	20
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980	980
Power input (each)	kW	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Total power input	kW	25.4	25.4	30.4	30.4	35.5	35.5	40.6	45.6	50.7
Total air flow rate	m³/h	242403	242403	290883	290883	339364	339364	387844	436325	484805
Evaporator										
Number of evaporators	#	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63.5	73.5	78.5	115	129
Condensing coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	45	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.75	8.75	8.75	8.8	8.8
Freecooling coil										
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	# / mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m2	25	25	30	30	35	35	40	45	50
Water connections										
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1894	1937
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-
Dimensions										
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865

Models: FIZ***HG0E		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963	13280	14247	14320
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672	15174	16184	16257

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [(1)];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [(1)].

Tab 4.43 - Technical Data - FIZ***HG0L

Models: FIZ***HG0L		065	075	080	085	095	110	125	140	150
Mechanical cooling performance [1] :										
Cooling capacity	kW	655	715	765	829	938	1080	1220	1353	1498
Compressors power input	kW	142	170	167	194	210	262	293	317	355
Total power input	kW	154	183	182	209	227	279	312	339	380
Unit EER	-	4.26	3.92	4.2	3.98	4.13	3.88	3.91	3.99	3.95
Fluid flow	m³/h	70	76	82	89	100	115	130	145	160
Total fluid side presure drop	kPa	126	148	136	154	140	163	156	153	175
Freecooling performance:										
Freecooling capacity [2]	kW	428	439	509	522	604	628	715	802	890
Total freecooling temperature (ZET)	°C	9,2	8	9,5	8,4	8,9	6,8	7	7,2	7,2
Unit EER at ZET point	-	54	59	52	56	55	63	62	62	61
Sound levels										
Sound Pressure Level SPL [3]	dB(A)	73.3	74.6	74.2	75.2	75.3	74.6	75.1	75.4	76.0
Sound Power Level PWL [4]	dB(A)	94.8	96.1	96.1	97.1	97.6	97.0	97.8	98.5	99.4
Refrigeration circuits										
Number of refrigeration circuits	#	1	1	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62	79/70	86/77
Compressors										
Number of compressors	#	1	1	2	2	2	2	2	2	2
Type	-	Inverter Screw	Inverter Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw
Nominal power	HP	240	290	160/140	200/160	180/200	210/240	240/240	290/280	290/320
Fans										
Number of fans	#	10	10	12	12	14	14	16	18	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850	850
Power input (each)	kW	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Total power input	kW	12.2	12.2	14.7	14.7	17.1	17.1	19.6	22	24.5
Total air flow rate	m³/h	175733	175733	210880	210880	246026	246026	281173	316319	351466
Evaporator										
Number of evaporators	#	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63.5	73.5	78.5	115	129
Condensing coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	45	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.75	8.75	8.75	8.8	8.8
Freecooling coil										
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	# / mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m2	25	25	30	30	35	35	40	45	50
Water connections										
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1894	1937
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-
Dimensions										
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845

Models: FIZ***HG0L		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	6844	6854	8230	8830	10401	10950	11756	13178	13990	14247	14320
Operating weight	kg	7612	7622	9098	9697	11958	12535	13438	15037	15901	16184	16257

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [(1)];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [(1)].

Tab 4.44 - Technical Data - FIZ***HG0Q

Models: FIZ***HG0Q		065	075	080	085	095	110	125	140	150
Mechanical cooling performance [1] :										
Cooling capacity	kW	628	683	733	790	898	1025	1159	1288	1427
Compressors power input	kW	153	185	180	210	226	284	318	342	383
Total power input	kW	161	192	188	218	235	294	329	355	397
Unit EER	-	3.91	3.56	3.9	3.62	3.81	3.48	3.52	3.63	3.6
Fluid flow	m³/h	67	73	78	84	96	110	124	138	152
Total fluid side presure drop	kPa	116	136	126	141	129	154	141	140	160
Freecooling performance:										
Freecooling capacity [2]	kW	379	387	451	461	534	555	629	706	784
Total freecooling temperature (ZET)	°C	7,6	6,3	8	6,8	7,3	5,1	5,3	5,5	5,5
Unit EER at ZET point	-	90	98	87	94	92	105	103	101	101
Sound levels										
Sound Pressure Level SPL [3]	dB(A)	69.5	70.9	70.4	71.6	71.6	70.8	71.4	71.6	72.3
Sound Power Level PWL [4]	dB(A)	91	92.4	92.4	93.5	94	93.2	94.1	94.7	95.7
Refrigeration circuits										
Number of refrigeration circuits	#	1	1	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62	79/70	86/77
Compressors										
Number of compressors	#	1	1	2	2	2	2	2	2	2
Type	-	Inverter Screw	Inverter Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw
Nominal power	HP	240	290	160/140	200/160	180/200	210/240	240/240	290/280	290/320
Fans										
Number of fans	#	10	10	12	12	14	14	16	18	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700	700
Power input (each)	kW	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total power input	kW	7	7	8.4	8.4	9.8	9.8	11.2	12.7	14.1
Total air flow rate	m³/h	142601	142601	171122	171122	199642	199642	228162	256683	285203
Evaporator										
Number of evaporators	#	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63.5	73.5	78.5	115	129
Condensing coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	45	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.75	8.75	8.75	8.8	8.8
Freecooling coil										
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	# / mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m2	25	25	30	30	35	35	40	45	50
Water connections										
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1894	1937
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-
Dimensions										
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845

Models: FIZ***HG0Q		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	6844	6854	8230	8830	10401	10950	11756	13178	13990	14247	14320
Operating weight	kg	7612	7622	9098	9697	11958	12535	13438	15037	15901	16184	16257

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [(1)];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [(1)].

Tab 4.45 - Technical Data - FH3***HG0C

Models: FH3***HG0C		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	678	763	851	958	1060	1130	1300	1466	1664	1811	1961
Compressors power input	kW	137	162	178	209	219	238	275	320	363	415	464
Total power input	kW	168	194	216	247	263	282	326	370	420	479	527
Unit EER	-	4.03	3.94	3.93	3.88	4.03	4.01	3.99	3.96	3.97	3.78	3.72
Fluid flow	m³/h	73	82	91	102	113	121	139	157	178	193	209
Total fluid side presure drop	kPa	132	167	155	170	181	173	192	174	171	158	159
Freecooling performance:												
Freecooling capacity [2]	kW	499	521	609	634	727	743	851	866	976	1078	1103
Total freecooling temperature (ZET)	°C	11,4	10	10,9	9,4	10,1	9,3	9,2	7,1	6,9	7,3	6,0
Unit EER at ZET point	-	21	24	22	25	24	25	26	29	29	29	31
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	84.4	84.5	84.9	84.9	85.1	85.2	85.4	85.5	85.7	85.9	86.0
Sound Power Level PWL [4]	dB(A)	105.9	106	106.8	106.8	107.5	107.5	108.1	108.2	108.7	109.2	109.3
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72	89/80	98/89	98/89
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Total power input	kW	31.7	31.7	38	38	44.4	44.4	50.7	50.7	57.0	63.4	63.4
Total air flow rate	m³/h	238272	238272	285926	285926	333581	333581	381235	381235	428890	476544	476544
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	# / mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709	1894	1937	1937
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784	2784	2784	2784

Models: FH3***HG0C		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963	13280	14247	14320
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672	15174	16184	16257

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [(1)];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [(1)].

Tab 4.46 - Technical Data - FH3***HG0E

Models: FH3***HG0E		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	680	765	853	961	1063	1134	1304	1471	1670	1817	1969
Compressors power input	kW	136	161	177	208	218	237	274	318	361	414	462
Total power input	kW	162	187	208	238	254	272	314	359	407	464	512
Unit EER	-	4.21	4.1	4.1	4.03	4.19	4.17	4.15	4.1	4.11	3.91	3.84
Fluid flow	m³/h	73	82	91	103	114	121	139	157	178	194	210
Total fluid side presure drop	kPa	133	168	156	171	182	174	193	176	172	160	160
Freecooling performance:												
Freecooling capacity [2]	kW	503	525	614	640	734	750	859	874	986	1088	1114
Total freecooling temperature (ZET)	°C	11,5	10,1	11	9,5	10,2	9,4	9,3	7,2	7,1	7,4	6,2
Unit EER at ZET point	-	27	30	28	32	30	32	32	36	37	36	39
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	78.4	78.6	78.9	79.1	79.3	79.4	79.8	80	80.3	80.6	80.9
Sound Power Level PWL [4]	dB(A)	99.9	100.1	100.9	101.1	101.7	101.8	102.5	102.7	103.4	104.0	104.3
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72	89/80	98/89	98/89
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980	980	980	980
Power input (each)	kW	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Total power input	kW	25.4	25.4	30.4	30.4	35.5	35.5	40.6	40.6	45.6	50.7	50.7
Total air flow rate	m³/h	242403	242403	290883	290883	339364	339364	387844	387844	436325	484805	484805
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	# / mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709	1894	1937	1937
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865

Models: FH3***HG0E		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963	13280	14247	14320
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672	15174	16184	16257

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [(1)];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [(1)].

Tab 4.47 - Technical Data - FH3***HG0L

Models: FH3***HG0L		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	644	718	806	903	1000	1060	1220	1366	1550	1688	1809
Compressors power input	kW	146	175	192	226	235	256	295	349	395	450	499
Total power input	kW	159	187	207	241	253	273	315	368	417	475	523
Unit EER	-	4.06	3.84	3.91	3.75	3.96	3.89	3.88	3.71	3.71	3.56	3.46
Fluid flow	m³/h	69	77	86	96	107	113	130	146	166	180	193
Total fluid side presure drop	kPa	120	149	140	152	162	154	171	153	150	139	137
Freecooling performance:												
Freecooling capacity [2]	kW	426	400	518	535	615	625	716	725	817	903	919
Total freecooling temperature (ZET)	°C	9,4	7,9	8,8	7,2	8	7,1	7	4,7	4,5	4,9	3,7
Unit EER at ZET point	-	53	59	55	61	58	62	62	70	70	69	74
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	72.5	73.2	73.4	74.2	74.3	74.6	75.2	76.1	76.6	77.1	77.7
Sound Power Level PWL [4]	dB(A)	94	94.7	95.4	96.2	96.6	97.0	97.9	98.8	99.7	100.5	101.1
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72	89/80	98/89	98/89
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850	850	850	850
Power input (each)	kW	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Total power input	kW	12.2	12.2	14.7	14.7	17.1	17.1	19.6	19.6	22	24.5	24.5
Total air flow rate	m³/h	175733	175733	210880	210880	246026	246026	281173	281173	316319	351466	351466
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	# / mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709	1894	1937	1937
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845

Models: FH3***HG0L		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963	13280	14247	14320
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672	15174	16184	16257

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [(1)];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [(1)].

Tab 4.48 - Technical Data - FH3***HG0Q

Models: FH3***HG0Q		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	615	681	769	856	950	1001	1154	1282	1454	1586	1772
Compressors power input	kW	155	187	204	242	250	272	313	373	423	480	507
Total power input	kW	162	194	212	250	260	281	324	384	436	494	527
Unit EER	-	3.79	3.52	3.62	3.42	3.66	3.56	3.56	3.34	3.34	3.21	3.36
Fluid flow	m³/h	66	73	82	91	102	107	123	137	155	169	189
Total fluid side presure drop	kPa	110	135	129	138	147	138	154	136	133	124	132
Freecooling performance:												
Freecooling capacity [2]	kW	377	387	457	470	542	549	629	634	714	790	881
Total freecooling temperature (ZET)	°C	7,9	6,3	7,3	5,5	6,4	5,5	5,3	3	2,9	3,2	3,1
Unit EER at ZET point	-	88	97	92	102	97	102	103	114	114	112	86
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	68.3	69.2	69.4	70.2	70.3	70.6	71.3	72.3	72.8	73.3	74.4
Sound Power Level PWL [4]	dB(A)	89.8	90.7	91.4	92.2	92.6	93.0	94	95	95.9	96.7	97.8
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72	89/80	98/89	98/89
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G800	S3G801	S3G802	S3G803	S3G804	S3G805	S3G806	S3G807	S3G808	S3G809	S3G810
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700	700	700	700
Power input (each)	kW	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total power input	kW	7	7	8.4	8.4	9.8	9.8	11.2	11.2	12.7	14.1	20.5
Total air flow rate	m³/h	142601	142601	171122	171122	199642	199642	228162	228162	256683	285203	329334
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium	Copper / Aluminium
Number of rows / fin spacing	# / mm	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8	3/1,8
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	768	768	827	827	1585	1585	1709	1709	1894	1937	1937
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845

Models: FH3***HG0Q		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7507	7540	8332	8384	10550	10980	11770	11963	13280	14247	14320
Operating weight	kg	8275	8307	9159	9210	12106	12565	13437	13672	15174	16184	16257

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; ethylene glycol 30%; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [(1)];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [(1)].

Tab 4.49 - Technical Data - CH4***HG0C

Models: CH4***HG0C		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	703	794	882	998	1099	1174	1349	1511	1733	1887	2038
Compressors power input	kW	131	154	170	198	208	226	261	301	342	410	446
Total power input	kW	161	184	205	234	250	267	309	348	395	469	505
Unit EER	-	4.38	4.31	4.29	4.27	4.40	4.40	4.37	4.34	4.39	4.02	4.04
Fluid flow	m³/h	68	76	85	96	106	113	129	145	166	181	196
Total fluid side presure drop	kPa	46	60	57	54	66	58	70	72	68	58	48
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	85.2	85.2	85.6	85.7	85.9	85.9	86.1	86.2	86.4	86.6	86.7
Sound Power Level PWL [4]	dB(A)	106.7	106.7	107.5	107.6	108.2	108.2	108.8	108.9	109.4	109.9	110.0
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65	81/73	89/81	89/81
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total power input	kW	29.7	29.7	35.6	35.6	41.5	41.5	47.5	47.5	53.4	59.3	59.3
Total air flow rate	m³/h	264838	264838	317805	317805	370773	370773	423740	423740	476708	529675	529675
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978	1083	1043	1043
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784	2784	2784	2784
Weights												
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774	10914	11651	11724
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752	11993	12698	12723

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [1].

Tab 4.50 - Technical Data - CH4***HG0E

Models: CH4***HG0E		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	705	796	884	1001	1102	1178	1353	1516	1740	1894	2046
Compressors power input	kW	130	154	169	197	208	225	260	299	340	408	443
Total power input	kW	154	177	197	225	240	257	297	336	382	455	490
Unit EER	-	4.58	4.5	4.48	4.44	4.59	4.58	4.55	4.51	4.56	4.16	4.18
Fluid flow	m³/h	68	76	85	96	106	113	130	146	167	182	196
Total fluid side presure drop	kPa	46	61	57	54	66	58	70	73	68	58	48
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	77.2	77.4	77.7	77.9	78.1	78.2	78.6	78.9	79.2	79.6	79.9
Sound Power Level PWL [4]	dB(A)	98.7	98.9	99.7	99.9	100.5	100.6	101.3	101.6	102.3	103.0	103.3
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65	81/73	89/81	89/81
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980	980	980	980
Power input (each)	kW	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Total power input	kW	23.4	23.4	28	28	32.7	32.7	37.4	37.4	42	46.7	46.7
Total air flow rate	m³/h	270618	270618	324742	324742	378865	378865	432989	432989	487113	541236	541236
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978	1083	1043	1043
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865
Weights												
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774	10914	11651	11724
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752	11993	12698	12723

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [1].

Tab 4.51 - Technical Data - CH4***HG0L

Models: CH4***HG0L		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	673	754	842	947	1046	1111	1278	1424	1632	1777	1921
Compressors power input	kW	139	165	181	213	223	242	279	327	372	442	484
Total power input	kW	150	177	195	226	238	258	298	345	392	465	506
Unit EER	-	4.48	4.27	4.33	4.18	4.39	4.32	4.30	4.13	4.16	3.82	3.79
Fluid flow	m³/h	65	72.3	81	91	100	107	123	137	157	171	184
Total fluid side presure drop	kPa	42	55	52	49	60	52	63	65	60	52	43
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	71.9	72.7	72.9	73.7	73.8	74.1	74.7	75.6	76.0	76.9	77.4
Sound Power Level PWL [4]	dB(A)	93.4	94.2	94.9	95.7	96.1	96.5	97.4	98.3	99.1	100.3	100.8
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65	81/73	89/81	89/81
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850	850	850	850
Power input (each)	kW	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Total power input	kW	11.3	11.3	13.6	13.6	15.8	15.8	18.1	18.1	20.4	22.6	22.6
Total air flow rate	m³/h	194919	194919	233902	233902	272886	272886	311870	311870	350853	389837	389837
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978	1083	1043	1043
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845
Weights												
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774	10914	11651	11724
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752	11993	12698	12723

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [1].

Tab 4.52 - Technical Data - CH4***HG0Q

Models: CH4***HG0Q		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	648	722	810	906	1002	1061	1221	1354	1551	1687	1893
Compressors power input	kW	146	175	191	226	235	256	295	349	398	470	493
Total power input	kW	152	181	199	234	244	265	305	359	409	483	512
Unit EER	-	4.25	3.98	4.08	3.88	4.11	4.01	4.00	3.77	3.79	3.5	3.7
Fluid flow	m³/h	62	69	78	87	96	102	117	130	149	162	182
Total fluid side presure drop	kPa	39	50	49	45	55	47	58	59	55	47	42
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	67.7	68.6	68.8	69.7	69.7	70.1	70.8	71.8	72.3	73.1	74
Sound Power Level PWL [4]	dB(A)	89.2	90.1	90.8	91.7	92.1	92.5	93.5	94.5	95.4	96.5	97.4
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65	81/73	89/81	89/81
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G800	S3G801	S3G802	S3G803	S3G804	S3G805	S3G806	S3G807	S3G808	S3G809	S3G810
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700	700	700	700
Power input (each)	kW	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total power input	kW	6.5	6.5	7.8	7.8	9	9	10.3	10.3	11.6	12.9	18.9
Total air flow rate	m³/h	158868	158868	190641	190641	222415	222415	254188	254188	285962	317735	365786
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978	1083	1043	1043
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845
Weights												
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774	10914	11651	11724
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752	11993	12698	12723

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [1].

Tab 4.53 - Technical Data - CIZ***HG0C

Models: CIZ***HG0C		065	075	080	085	095	110	125	140	150
Mechanical cooling performance [1] :										
Cooling capacity	kW	705	774	823	899	1010	1177	1328	1463	1620
Compressors power input	kW	126	151	151	172	189	230	258	283	317
Total power input	kW	155	181	187	207	231	272	306	336	376
Unit EER	-	4.54	4.29	4.41	4.33	4.38	4.33	4.35	4.35	4.30
Fluid flow	m³/h	68	74	79	86	97	113	127	140	155
Total fluid side presure drop	kPa	48	57	53	63	56	60	54	52	68
Sound levels										
Sound Pressure Level SPL [3]	dB(A)	85.2	85.3	85.6	85.7	85.9	85.9	86.1	86.3	86.5
Sound Power Level PWL [4]	dB(A)	106.7	106.8	107.6	107.6	108.3	108.2	108.8	109.3	109.8
Refrigeration circuits										
Number of refrigeration circuits	#	1	1	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62	79/70	86/77
Compressors										
Number of compressors	#	1	1	2	2	2	2	2	2	2
Type	-	Inverter Screw	Inverter Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw
Nominal power	HP	240	290	160/140	200/160	180/200	210/240	240/240	290/280	290/320
Fans										
Number of fans	#	10	10	12	12	14	14	16	18	20
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total power input	kW	29.7	29.7	35.6	35.6	41.5	41.5	47.5	53.4	59.3
Total air flow rate	m³/h	264697	264697	317636	317636	370575	370575	423515	476454	529393
Evaporator										
Number of evaporators	#	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63.5	73.5	78.5	115	129
Condensing coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	45	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.75	8.75	8.75	8.8	8.8
Water connections										
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	1083	1043
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-
Dimensions										
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784	2784
Weights										
Net weight	kg	5538	5548	6695	7295	8456	9005	9567	10812	11393
Operating weight	kg	5892	5902	7029	7629	9364	9940	10518	11860	11860

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [1].

Tab 4.54 - Technical Data - CIZ***HG0E

Models: CIZ***HG0E		065	075	080	085	095	110	125	140	150
Mechanical cooling performance [1] :										
Cooling capacity	kW	707	776	825	901	1013	1181	1332	1468	1625
Compressors power input	kW	125	150	150	171	188	229	257	281	315
Total power input	kW	148	173	178	199	221	261	294	323	362
Unit EER	-	4.77	4.48	4.63	4.53	4.58	4.52	4.53	4.54	4.49
Fluid flow	m³/h	68	75	79	87	97	113	128	141	156
Total fluid side presure drop	kPa	48	58	53	63	56	61	55	52	68
Sound levels										
Sound Pressure Level SPL [3]	dB(A)	77.3	77.8	77.8	78.2	78.4	78.2	78.5	78.7	79.0
Sound Power Level PWL [4]	dB(A)	98.8	99.3	99.8	100.1	100.8	100.6	101.2	101.8	102.4
Refrigeration circuits										
Number of refrigeration circuits	#	1	1	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62	79/70	86/77
Compressors										
Number of compressors	#	1	1	2	2	2	2	2	2	2
Type	-	Inverter Screw	Inverter Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw
Nominal power	HP	240	290	160/140	200/160	180/200	210/240	240/240	290/280	290/320
Fans										
Number of fans	#	14	14	14	14	14	14	16	18	20
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980	980
Power input (each)	kW	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Total power input	kW	23.4	23.4	28	28	32.7	32.7	37.4	42.0	46.7
Total air flow rate	m³/h	270462	270462	324555	324555	378647	378647	432739	486832	540924
Evaporator										
Number of evaporators	#	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63.5	73.5	78.5	115	129
Condensing coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	45	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.75	8.75	8.75	8.8	8.8
Water connections										
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	1083	1043
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-
Dimensions										
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865
Weights										
Net weight	kg	5538	5548	6695	7295	8456	9005	9567	10812	11393
Operating weight	kg	5892	5902	7029	7629	9364	9940	10518	11860	11860

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [1].

Tab 4.55 - Technical Data - CIZ***HG0L

Models: CIZ***HG0L		065	075	080	085	095	110	125	140	150
Mechanical cooling performance [1] :										
Cooling capacity	kW	675	739	788	856	966	1115	1260	1393	1542
Compressors power input	kW	137	165	163	188	205	253	284	308	345
Total power input	kW	149	177	177	202	220	269	302	329	368
Unit EER	-	4.54	4.18	4.46	4.25	4.38	4.15	4.18	4.24	4.19
Fluid flow	m³/h	65	71	76	82	92.7	107	121	134	148
Total fluid side presure drop	kPa	44	52	49	57	51	54	49	47	62
Sound levels										
Sound Pressure Level SPL [3]	dB(A)	72.8	74.1	73.8	74.8	74.9	74.2	74.7	75.0	75.6
Sound Power Level PWL [4]	dB(A)	94.3	95.6	95.7	96.7	97.2	96.6	97.4	98.1	99.0
Refrigeration circuits										
Number of refrigeration circuits	#	1	1	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62	79/70	86/77
Compressors										
Number of compressors	#	1	1	2	2	2	2	2	2	2
Type	-	Inverter Screw	Inverter Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw
Nominal power	HP	240	290	160/140	200/160	180/200	210/240	240/240	290/280	290/320
Fans										
Number of fans	#	10	10	12	12	14	14	16	18	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850	850
Power input (each)	kW	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Total power input	kW	11.3	11.3	12	13.6	15.8	15.8	18.1	20.4	22.6
Total air flow rate	m³/h	194829	194829	233795	233795	272760	272760	311726	350692	389658
Evaporator										
Number of evaporators	#	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63.5	73.5	78.5	115	129
Condensing coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	45	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.75	8.75	8.75	8.8	8.8
Water connections										
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	1083	1043
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-
Dimensions										
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845
Weights										
Net weight	kg	5538	5548	6695	7295	8456	9005	9567	10812	11393
Operating weight	kg	5892	5902	7029	7629	9364	9940	10518	11860	11860

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [1].

Tab 4.56 - Technical Data - CIZ***HG0Q

Models: CIZ***HG0Q		065	075	080	085	095	110	125	140	150
Mechanical cooling performance [1] :										
Cooling capacity	kW	650	709	759	821	930	1065	1204	1334	1477
Compressors power input	kW	148	178	174	202	218	273	306	330	369
Total power input	kW	154	185	182	210	227	282	316	342	382
Unit EER	-	4.22	3.84	4.18	3.91	4.09	3.77	3.81	3.9	3.86
Fluid flow	m³/h	62	68	73	79	89	102	116	128	142
Total fluid side presure drop	kPa	41	48	46	53	48	50	45	44	57
Sound levels										
Sound Pressure Level SPL [3]	dB(A)	69	70.5	70	71.1	74.6	70.4	71	71.2	71.9
Sound Power Level PWL [4]	dB(A)	90.5	92	91.9	93.1	97	92.8	93.7	94.3	95.3
Refrigeration circuits										
Number of refrigeration circuits	#	1	1	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62	79/70	86/77
Compressors										
Number of compressors	#	1	1	2	2	2	2	2	2	2
Type	-	Inverter Screw	Inverter Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw
Nominal power	HP	240	290	160/140	200/160	180/200	210/240	240/240	290/280	290/320
Fans										
Number of fans	#	10	10	12	12	14	14	16	18	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700	700
Power input (each)	kW	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total power input	kW	6.5	6.5	7.8	7.8	9	9	10.3	11.6	12.9
Total air flow rate	m³/h	158799	158799	190559	190559	222318	222318	254078	285838	317598
Evaporator										
Number of evaporators	#	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63.5	73.5	78.5	115	129
Condensing coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	45	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.75	8.75	8.75	8.8	8.8
Water connections										
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	1083	1043
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-
Dimensions										
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845
Weights										
Net weight	kg	5538	5548	6695	7295	8456	9005	9567	10812	11393
Operating weight	kg	5892	5902	7029	7629	9364	9940	10518	11860	11860

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [1].

Tab 4.57 - Technical Data - CH3***HG0C

Models: CH3***HG0C		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	698	786	876	990	1090	1163	1339	1511	1716	1867	2027
Compressors power input	kW	135	160	176	205	215	233	270	313	355	407	455
Total power input	kW	165	189	211	241	257	275	318	361	408	467	515
Unit EER	-	4.24	4.16	4.15	4.11	4.24	4.23	4.21	4.19	4.20	4.00	3.94
Fluid flow	m³/h	67	76	84	95	105	112	129	145	165	179	195
Total fluid side presure drop	kPa	45	59	57	53	65	57	69	73	66	57	48
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	85.2	85.2	85.6	85.7	85.9	85.9	86.1	86.2	86.4	86.6	86.7
Sound Power Level PWL [4]	dB(A)	106.7	106.7	107.5	107.6	108.2	108.2	108.8	108.9	109.4	109.9	110.0
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72	89/80	98/89	98/89
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total power input	kW	29.7	29.7	35.6	35.6	41.5	41.5	47.5	47.5	53.4	59.3	59.3
Total air flow rate	m³/h	264697	264697	317636	317636	370575	370575	423515	423515	476454	529393	529393
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978	1083	1043	1043
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784	2784	2784	2784
Weights												
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774	10914	11651	11724
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752	11993	12698	12723

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [1].

Tab 4.58 - Technical Data - CH3***HG0E

Models: CH3***HG0E		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	701	789	879	993	1094	1167	1344	1517	1723	1874	2036
Compressors power input	kW	134	159	175	204	215	232	269	349	353	405	453
Total power input	kW	158	182	203	232	247	265	307	311	395	452	500
Unit EER	-	4.44	4.33	4.33	4.27	4.42	4.40	4.38	4.35	4.36	4.15	4.07
Fluid flow	m³/h	67	75.7	84	95	105	112	129	146	165	180	195
Total fluid side presure drop	kPa	45	60	57	54	65	57	69	73	67	57	48
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	77.2	77.4	77.7	77.9	78.2	78.3	78.7	79.0	79.3	79.6	79.9
Sound Power Level PWL [4]	dB(A)	98.7	98.9	99.7	99.9	100.6	100.7	101.4	101.7	102.4	103.0	103.3
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72	89/80	98/89	98/89
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980	980	980	980
Power input (each)	kW	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Total power input	kW	23.4	23.4	28	28	32.7	32.7	37.4	37.4	42	46.7	46.7
Total air flow rate	m³/h	270462	270462	324555	324555	378647	378647	432739	432739	486832	540924	540924
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978	1083	1043	1043
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865
Weights												
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774	10914	11651	11724
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752	11993	12698	12723

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [1].

Tab 4.59 - Technical Data - CH3***HG0L

Models: CH3***HG0L		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	666	744	834	936	1034	1097	1263	1417	1608	1751	1881
Compressors power input	kW	144	172	188	221	231	250	289	340	385	440	489
Total power input	kW	155	183	202	235	246	266	307	358	406	463	511
Unit EER	-	4.29	4.07	4.13	3.99	4.19	4.12	4.11	3.96	3.96	3.78	3.68
Fluid flow	m³/h	64	71	80	90	99	105	121	136	154	168	181
Total fluid side presure drop	kPa	41	53	51	48	58	51	62	64	59	50	41
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	72.1	72.8	73.1	73.9	74.0	74.3	74.9	75.8	76.3	76.8	77.5
Sound Power Level PWL [4]	dB(A)	93.6	94.3	95.1	95.9	96.3	96.7	97.6	98.5	99.4	100.2	100.9
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72	89/80	98/89	98/89
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850	850	850	850
Power input (each)	kW	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Total power input	kW	11.3	11.3	13.6	13.6	15.8	15.8	18.1	18.1	20.4	22.6	22.6
Total air flow rate	m³/h	194829	194829	233795	233795	272760	272760	311726	311726	350692	389658	389658
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978	1083	1043	1043
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845
Weights												
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774	10914	11651	11724
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752	11993	12698	12723

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [1].

Tab 4.60 - Technical Data - CH3***HG0Q

Models: CH3***HG0Q		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	639	710	800	893	987	1043	1202	1340	1520	1656	1847
Compressors power input	kW	152	182	199	235	244	264	305	362	411	467	497
Total power input	kW	158	188	207	243	253	273	316	372	422	480	516
Unit EER	-	4.04	3.77	3.87	3.68	3.91	3.81	3.81	3.6	3.6	3.45	3.58
Fluid flow	m³/h	61	68	77	85.7	94.7	100	115	129	146	159	177
Total fluid side presure drop	kPa	38	49	47	44	53	46	56	58	53	45	40
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	67.9	68.8	69	69.9	69.9	70.3	71	72	72.5	73.0	74.1
Sound Power Level PWL [4]	dB(A)	89.4	90.3	91	91.9	92.3	92.7	93.7	94.7	95.6	96.4	97.5
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72	89/80	98/89	98/89
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G800	S3G801	S3G802	S3G803	S3G804	S3G805	S3G806	S3G807	S3G808	S3G809	S3G810
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700	700	700	700
Power input (each)	kW	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total power input	kW	6.5	6.5	7.8	7.8	9	9	10.3	10.3	11.6	12.9	18.9
Total air flow rate	m³/h	158799	158799	190559	190559	222318	222318	254078	254078	285838	317598	365621
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m2	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	354	354	334	334	936	936	978	978	1083	1043	1043
Fluid volume (internal glycol circuit)	l	-	-	-	-	-	-	-	-	-	-	-
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845
Weights												
Net weight	kg	6202	6234	6796	6847	8604	9035	9582	9774	10914	11651	11724
Operating weight	kg	6556	6588	7130	7181	9512	9971	10517	10752	11993	12698	12723

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions [1];
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions [1].

Tab 4.61 - Technical Data - NH4***HG0C

Models: NH4***HG0C		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	693	780	868	980	1080	1152	1324	1480	1698	1849	1997
Compressors power input	kW	134	158	174	203	213	231	267	310	352	421	459
Total power input	kW	166	190	212	241	258	276	318	360	409	485	522
Unit EER	-	4.19	4.11	4.1	4.06	4.19	4.18	4.16	4.11	4.15	3.81	3.82
Fluid flow	m³/h	66	75	83	94	104	111	127	142	163	177	192
Total fluid side presure drop	kPa	85	108	84	88	94	90	107	118	102	94	90
Freecooling performance:												
Freecooling capacity [2]	kW	430	446	528	549	632	644	740	763	871	965	985
Total freecooling temperature (ZET)	°C	8.4	6.8	8.1	6.4	7.3	6.4	6.4	4.6	4.6	5.0	3.6
Unit EER at ZET point	-	15	17	16	18	18	19	19	21	22	21	23
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	84.3	84.4	84.8	84.8	85.0	85.1	85.3	85.4	85.6	85.8	85.9
Sound Power Level PWL [4]	dB(A)	105.8	105.9	106.7	106.7	107.4	107.4	108.0	108.1	108.6	109.1	109.2
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65	81/73	89/81	89/81
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Total power input	kW	31.8	31.8	38.2	38.2	44.6	44.6	50.9	50.9	57.3	63.7	63.7
Total air flow rate	m³/h	236043	236043	283251	283251	330460	330460	377668	377668	424877	472085	472085
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1218	1418	1427	1427
Fluid volume (internal glycol circuit)	l	499	499	599	599	759	759	894	894	1066	1189	1189
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784	2784	2784	2784

Models: NH4***HG0C		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423	14134	15154	15226
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535	16621	17774	17798

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions (1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions (1).

Tab 4.61 - Technical Data - NH4***HG0E

Models: NH4***HG0E		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	694	782	870	983	1083	1156	1328	1485	1703	1855	2003
Compressors power input	kW	133	157	173	202	212	230	266	308	350	419	457
Total power input	kW	159	183	204	233	248	266	307	349	396	470	508
Unit EER	-	4.37	4.27	4.27	4.22	4.37	4.35	4.32	4.26	4.30	3.94	3.95
Fluid flow	m³/h	67	75	83.5	94	104	111	127	143	163	178	192
Total fluid side presure drop	kPa	85	109	84	88	95	91	107	118	102	94	91
Freecooling performance:												
Freecooling capacity [2]	kW	434	451	533	554	638	651	748	772	880	976	996
Total freecooling temperature (ZET)	°C	8.6	6.9	8.2	6.6	7.5	6.6	6.6	4.7	4.7	5.2	3.8
Unit EER at ZET point	-	17	19	19	21	21	23	22	25	26	25	27
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	78.7	78.8	79.1	79.3	79.5	79.6	80.0	80.2	80.4	80.8	81.0
Sound Power Level PWL [4]	dB(A)	100.2	100.3	101.1	101.3	101.9	102.0	102.7	102.9	103.5	104.2	104.4
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65	81/73	89/81	89/81
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980	980	980	980
Power input (each)	kW	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Total power input	kW	25.5	25.5	30.6	30.6	35.7	35.7	40.8	40.8	45.9	51.0	51.0
Total air flow rate	m³/h	240117	240117	288140	288140	336164	336164	384187	384187	432211	480234	480234
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1218	1418	1427	1427
Fluid volume (internal glycol circuit)	l	499	499	599	599	759	759	894	894	1066	1189	1189
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865

Models: NH4***HG0E		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423	14134	15154	15226
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535	16621	17774	17798

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions (1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions (1).

Tab 4.63 - Technical Data - NH4***HG0L

Models: NH4***HG0L		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	659	736	824	925	1022	1084	1247	1386	1588	1728	1870
Compressors power input	kW	143	170	186	220	229	249	288	339	386	457	501
Total power input	kW	155	183	201	235	246	266	308	358	408	482	525
Unit EER	-	4.25	4.03	4.1	3.94	4.15	4.07	4.05	3.87	3.89	3.59	3.56
Fluid flow	m³/h	63	71	79	89	98	104	120	133	152	166	179
Total fluid side presure drop	kPa	77	97	76	79	85	80	95	104	90	83	80
Freecooling performance:												
Freecooling capacity [2]	kW	362	373	443	458	528	536	615	631	719	797	811
Total freecooling temperature (ZET)	°C	6.1	4.5	5.6	3.9	4.8	3.9	3.9	2.1	2	2.4	0.9
Unit EER at ZET point	-	24	27	27	31	31	33	32	35	37	36	39
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	72.5	73.2	73.4	74.1	74.2	74.6	75.2	76.0	76.5	77.2	77.8
Sound Power Level PWL [4]	dB(A)	94	94.7	95.4	96.1	96.6	97.0	97.9	98.7	99.6	100.6	101.2
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65	81/73	89/81	89/81
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850	850	850	850
Power input (each)	kW	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Total power input	kW	12.3	12.3	14.8	14.8	17.3	17.3	19.7	19.7	22.2	24.7	24.7
Total air flow rate	m³/h	173722	173722	208467	208467	243211	243211	277956	277956	312700	347445	347445
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1218	1418	1427	1427
Fluid volume (internal glycol circuit)	l	499	499	599	599	759	759	894	894	1066	1189	1189
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845

Models: NH4***HG0L		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423	14134	15154	15226
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535	16621	17774	17798

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions (1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions (1).

Tab 4.64 - Technical Data - NH4***HG0Q

Models: NH4***HG0Q		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	631	700	788	879	973	1027	1182	1307	1496	1627	1838
Compressors power input	kW	151	182	198	236	244	266	306	365	415	489	511
Total power input	kW	158	189	206	244	254	276	317	376	428	503	532
Unit EER	-	3.99	3.71	3.82	3.6	3.83	3.73	3.73	3.48	3.49	3.23	3.46
Fluid flow	m³/h	61	67	76	84	93.4	99	113	125	144	156	176
Total fluid side presure drop	kPa	71	89	70	71	77	73	86	93	80	74	77
Freecooling performance:												
Freecooling capacity [2]	kW	320	329	392	403	465	472	541	554	629	698	778
Total freecooling temperature (ZET)	°C	4.4	2.8	3.8	2.1	3.1	2.2	2.1	0.4	0.2	0.6	0.4
Unit EER at ZET point	-	28	31	33	37	39	41	38	42	45	43	42
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	68.3	69.1	69.3	70.2	70.2	70.6	71.2	72.2	72.7	73.5	74.4
Sound Power Level PWL [4]	dB(A)	89.8	90.6	91.3	92.2	92.6	93.0	93.9	94.9	95.8	96.9	97.8
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	42/41	42/41	54/48	54/48	61/56	61/56	75/65	75/65	81/73	89/81	89/81
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G800	S3G801	S3G802	S3G803	S3G804	S3G805	S3G806	S3G807	S3G808	S3G809	S3G810
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700	700	700	700
Power input (each)	kW	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total power input	kW	7.1	7.1	8.5	8.5	9.9	9.9	11.3	11.3	12.8	14.2	20.6
Total air flow rate	m³/h	140579	140579	168694	168694	196810	196810	224926	224926	253042	281157	325304
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1218	1418	1427	1427
Fluid volume (internal glycol circuit)	l	499	499	599	599	759	759	894	894	1066	1189	1189
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845

Models: NH4***HG0Q		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423	14134	15154	15226
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535	16621	17774	17798

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions (1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions (1).

Tab 4.65 - Technical Data - NIZ***HG0C

Models: NIZ***HG0C		065	075	080	085	095	110	125	140	150
Mechanical cooling performance [1] :										
Cooling capacity	kW	695	762	811	884	995	1156	1304	1439	1593
Compressors power input	kW	130	156	155	177	194	238	267	292	327
Total power input	kW	161	188	193	215	239	282	318	349	390
Unit EER	-	4.31	4.06	4.2	4.1	4.16	4.09	4.11	4.13	4.08
Fluid flow	m³/h	67	73	78	85	96	111	125	138	153
Total fluid side presure drop	kPa	87	104	77	90	81	93	90	77	98
Freecooling performance:										
Freecooling capacity [2]	kW	430	443	515	531	615	645	736	830	915
Total freecooling temperature (ZET)	°C	8.4	7.1	8.9	7.8	7.8	6.4	6.6	7.1	7
Unit EER at ZET point	-	15	16	15	17	17	19	18	19	18
Sound levels										
Sound Pressure Level SPL [3]	dB(A)	84.4	84.5	84.8	84.8	85.1	85.1	85.3	85.5	85.7
Sound Power Level PWL [4]	dB(A)	105.9	106	106.7	106.8	107.4	107.4	108.0	108.5	109.0
Refrigeration circuits										
Number of refrigeration circuits	#	1	1	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62	79/70	86/77
Compressors										
Number of compressors	#	1	1	2	2	2	2	2	2	2
Type	-	Inverter Screw	Inverter Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw
Nominal power	HP	240	290	160/140	200/160	180/200	210/240	240/240	290/280	290/320
Fans										
Number of fans	#	10	10	12	12	14	14	16	18	20
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Total power input	kW	31.8	31.8	38.2	38.2	44.6	44.6	50.9	57.3	63.7
Total air flow rate	m³/h	235932	235932	283119	283119	330305	330305	377492	424678	471865
Evaporator										
Number of evaporators	#	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63.5	73.5	78.5	115	129
Condensing coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	45	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.75	8.75	8.75	8.8	8.8
Freecooling coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	45	50
Water connections										
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1418	1427
Fluid volume (internal glycol circuit)	l	499	499	599	599	759	759	894	1066	1189
Dimensions										
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784	2784

Models: NIZ***HG0C		065	075	080	085	095	110	125	140	150
Weights										
Net weight	kg	7044	7054	8640	9240	10887	11435	12216	13933	14785
Operating weight	kg	8000	8010	9699	10299	12791	13367	14350	16388	17285

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions (1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions (1).

Tab 4.66 - Technical Data - NIZ***HG0E

Models: NIZ***HG0E		065	075	080	085	095	110	125	140	150
Mechanical cooling performance [1] :										
Cooling capacity	kW	697	764	813	886	997	1159	1308	1443	1597
Compressors power input	kW	128.9	155	154	176	194	237	265	290	325
Total power input	kW	154	181	185	207	229	272	306	336	376
Unit EER	-	4.51	4.23	4.39	4.28	4.35	4.26	4.27	4.29	4.25
Fluid flow	m³/h	67	73	78	85	96	111	126	138	153
Total fluid side presure drop	kPa	88	104	77	91	81	93	91	78	99
Freecooling performance:										
Freecooling capacity [2]	kW	434	448	520	536	621	651	744	838	925
Total freecooling temperature (ZET)	°C	8.5	7.3	9.1	8	8.5	6.5	6.8	7.2	7.1
Unit EER at ZET point	-	17	19	18	19	20	23	22	22	21
Sound levels										
Sound Pressure Level SPL [3]	dB(A)	78.8	79.1	79.3	79.5	79.8	79.6	79.9	80.1	80.4
Sound Power Level PWL [4]	dB(A)	100.3	100.6	101.3	101.5	102.2	102.0	102.6	103.2	103.8
Refrigeration circuits										
Number of refrigeration circuits	#	1	1	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62	79/70	86/77
Compressors										
Number of compressors	#	1	1	2	2	2	2	2	2	2
Type	-	Inverter Screw	Inverter Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw
Nominal power	HP	240	290	160/140	200/160	180/200	210/240	240/240	290/280	290/320
Fans										
Number of fans	#	10	10	12	12	14	14	16	18	20
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980	980
Power input (each)	kW	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Total power input	kW	25.5	25.5	30.6	30.6	35.7	35.7	40.8	45.9	51.0
Total air flow rate	m³/h	240003	240003	288004	288004	336004	336004	384005	432006	480006
Evaporator										
Number of evaporators	#	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63.5	73.5	78.5	115	129
Condensing coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	45	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.75	8.75	8.75	8.8	8.8
Freecooling coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	45	50
Water connections										
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1418	1427
Fluid volume (internal glycol circuit)	l	499	499	599	599	759	759	894	1066	1189
Dimensions										
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865

Models: NIZ***HG0E		065	075	080	085	095	110	125	140	150
Weights										
Net weight	kg	7044	7054	8640	9240	10887	11435	12216	13933	14785
Operating weight	kg	8000	8010	9699	10299	12791	13367	14350	16388	17285

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions (1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions (1).

Tab 4.67 - Technical Data - NIZ***HG0L

Models: NIZ***HG0L		065	075	080	085	095	110	125	140	150
Mechanical cooling performance [1] :										
Cooling capacity	kW	662	723	772	837	946	1088	1230	1361	1507
Compressors power input	kW	143	172	169	196	212	264	295	320	358
Total power input	kW	155	185	184	210	229	281	315	342	383
Unit EER	-	4.26	3.92	4.21	3.98	4.13	3.87	3.90	3.98	3.94
Fluid flow	m³/h	64	69	74	80	91	104	118	131	145
Total fluid side presure drop	kPa	80	94	70	82	73	83	81	70	89
Freecooling performance:										
Freecooling capacity [2]	kW	362	371	434	445	516	536	613	691	764
Total freecooling temperature (ZET)	°C	6	4.8	6.5	5.3	5.9	3.9	4.1	4.4	4.4
Unit EER at ZET point	-	24	26	26	28	29	33	31	32	31
Sound levels										
Sound Pressure Level SPL [3]	dB(A)	73.4	74.7	74.3	75.3	75.4	74.7	75.2	75.5	76.0
Sound Power Level PWL [4]	dB(A)	94.9	96.2	96.3	97.2	97.7	97.1	98.0	98.6	99.5
Refrigeration circuits										
Number of refrigeration circuits	#	1	1	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62	79/70	86/77
Compressors										
Number of compressors	#	1	1	2	2	2	2	2	2	2
Type	-	Inverter Screw	Inverter Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw
Nominal power	HP	240	290	160/140	200/160	180/200	210/240	240/240	290/280	290/320
Fans										
Number of fans	#	10	10	12	12	14	14	16	18	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850	850
Power input (each)	kW	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Total power input	kW	12.3	12.3	14.8	14.8	17.3	17.3	19.7	22.2	24.7
Total air flow rate	m³/h	173654	173654	208385	208385	243116	243116	277847	312578	347309
Evaporator										
Number of evaporators	#	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63.5	73.5	78.5	115	129
Condensing coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	45	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.75	8.75	8.75	8.8	8.8
Freecooling coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	45	50
Water connections										
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1418	1427
Fluid volume (internal glycol circuit)	l	499	499	599	599	759	759	894	1066	1189
Dimensions										
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845

Models: NIZ***HG0L		065	075	080	085	095	110	125	140	150
Weights										
Net weight	kg	7044	7054	8640	9240	10887	11435	12216	13933	14785
Operating weight	kg	8000	8010	9699	10299	12791	13367	14350	16388	17285

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions (1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions (1).

Tab 4.68 - Technical Data - NIZ***HG0Q

Models: NIZ***HG0Q		065	075	080	085	095	110	125	140	150
Mechanical cooling performance [1] :										
Cooling capacity	kW	633	689	739	797	904	1030	1166	1293	1432
Compressors power input	kW	155	187	182	212	228	288	322	346	387
Total power input	kW	162	194	190	221	238	298	333	358	401
Unit EER	-	3.9	3.55	3.89	3.61	3.80	3.46	3.50	3.61	3.57
Fluid flow	m³/h	61	66	71	77	87	99	112	124	137
Total fluid side presure drop	kPa	73	86	64	74	67	75	73	63	81
Freecooling performance:										
Freecooling capacity [2]	kW	321	328	385	393	456	472	539	608	672
Total freecooling temperature (ZET)	°C	4.4	3.1	4.7	3.6	4.2	2.1	2.3	2.6	2.6
Unit EER at ZET point	-	28	31	31	34	36	41	38	39	38
Sound levels										
Sound Pressure Level SPL [3]	dB(A)	69.7	71.1	70.6	71.7	71.7	71	71.5	71.8	72.4
Sound Power Level PWL [4]	dB(A)	91.2	92.6	92.5	93.7	94.1	93.4	94.3	94.9	95.8
Refrigeration circuits										
Number of refrigeration circuits	#	1	1	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	81/-	81/-	52/46	52/46	60/53	60/53	73/62	79/70	86/77
Compressors										
Number of compressors	#	1	1	2	2	2	2	2	2	2
Type	-	Inverter Screw	Inverter Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw	Inverter Screw/ Screw
Nominal power	HP	240	290	160/140	200/160	180/200	210/240	240/240	290/280	290/320
Fans										
Number of fans	#	10	10	12	12	14	14	16	18	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700	700
Power input (each)	kW	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total power input	kW	7.1	7.1	8.5	8.5	9.9	9.9	11.3	12.8	14.2
Total air flow rate	m³/h	140528	140528	168634	168634	196739	196739	224845	252950	281056
Evaporator										
Number of evaporators	#	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	94	94	55	55	63.5	73.5	78.5	115	129
Condensing coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	45	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.75	8.75	8.75	8.8	8.8
Freecooling coil										
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	45	50
Water connections										
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1418	1427
Fluid volume (internal glycol circuit)	l	499	499	599	599	759	759	894	1066	1189
Dimensions										
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	12106	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845

Models: NIZ***HG0Q		065	075	080	085	095	110	125	140	150
Weights										
Net weight	kg	7044	7054	8640	9240	10887	11435	12216	13933	14785
Operating weight	kg	8000	8010	9699	10299	12791	13367	14350	16388	17285

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions (1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions (1).

Tab 4.69 - Technical Data - NH3***HG0C

Models: NH3***HG0C		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	687	772	861	971	1071	1140	1313	1478	1678	1826	1976
Compressors power input	kW	138	164	180	211	221	239	277	322	365	419	467
Total power input	kW	170	196	218	249	265	284	328	373	423	482	531
Unit EER	-	4.05	3.95	3.95	3.9	4.04	4.02	4	3.96	3.97	3.79	3.72
Fluid flow	m³/h	66	74	83	93	103	109	126	142	161	175	190
Total fluid side presure drop	kPa	84	106	83	86	93	88	105	117	100	92	88
Freecooling performance:												
Freecooling capacity [2]	kW	423	445	526	547	630	642	738	763	868	962	982
Total freecooling temperature (ZET)	°C	8.5	6.9	8.2	6.6	7.4	6.6	6.5	4.6	4.8	5.2	3.8
Unit EER at ZET point	-	15	16	15	17	18	19	19	21	22	21	23
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	84.3	84.4	84.8	84.8	85	85.1	85.3	85.4	85.6	85.8	85.9
Sound Power Level PWL [4]	dB(A)	105.8	105.9	106.7	106.7	107.4	107.4	108	108.1	108.6	109.1	109.2
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72	89/80	98/89	98/89
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091	FN091
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
Power input (each)	kW	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Total power input	kW	31.8	31.8	38.2	38.2	44.6	44.6	50.9	50.9	57.3	63.7	63.7
Total air flow rate	m³/h	235932	235932	283119	283119	330305	330305	377492	377492	424678	471865	471865
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1218	1418	1427	1427
Fluid volume (internal glycol circuit)	l	499	499	599	599	759	759	894	894	1066	1189	1189
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2784	2784	2784	2784	2784	2784	2784	2784	2784	2784	2784

Models: NH3***HG0C		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423	14134	15154	15226
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535	16621	17774	17798

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions (1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions (1).

Tab 4.70 - Technical Data - NH3***HG0E

Models: NH3***HG0E		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	689	774	864	974	1074	1144	1317	1483	1684	1833	1984
Compressors power input	kW	138	163	179	210	220	238	276	321	364	417	465
Total power input	kW	163	189	210	241	256	274	317	362	410	468	516
Unit EER	-	4.23	4.11	4.12	4.05	4.2	4.17	4.16	4.1	4.11	3.92	3.84
Fluid flow	m³/h	66	74	83	93	103	110	126	142	162	176	190
Total fluid side presure drop	kPa	84	107	83	87	93	89	106	118	100	92	89
Freecooling performance:												
Freecooling capacity [2]	kW	433	449	531	553	636	649	746	771	877	972	993
Total freecooling temperature (ZET)	°C	8.7	7.1	8.3	6.7	7.6	6.7	6.7	4.7	4.9	5.4	3.9
Unit EER at ZET point	-	17	19	17	19	21	22	22	25	25	25	27
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	78.7	78.9	79.1	79.3	79.6	79.7	80	80.3	80.5	80.8	81.1
Sound Power Level PWL [4]	dB(A)	100.2	100.4	101.1	101.3	102	102.1	102.7	103	103.6	104.2	104.5
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72	89/80	98/89	98/89
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910	S3G910
Wheel nominal diameter	mm	910	910	910	910	910	910	910	910	910	910	910
Rotation speed	1/min	980	980	980	980	980	980	980	980	980	980	980
Power input (each)	kW	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Total power input	kW	25.5	25.5	30.6	30.6	35.7	35.7	40.8	40.8	45.9	51.0	51.0
Total air flow rate	m³/h	240003	240003	288004	288004	336004	336004	384005	384005	432006	480006	480006
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1218	1418	1427	1427
Fluid volume (internal glycol circuit)	l	499	499	599	599	759	759	894	894	1066	1189	1189
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865	2865

Models: NH3***HG0E		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423	14134	15154	15226
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535	16621	17774	17798

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions (1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions (1).

Tab 4.71 - Technical Data - NH3***HG0L

Models: NH3***HG0L		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	651	725	815	913	1009	1067	1230	1375	1560	1699	1818
Compressors power input	kW	148	177	194	229	238	258	298	352	399	455	503
Total power input	kW	160	189	209	244	255	275	318	372	421	479	528
Unit EER	-	4.06	3.83	3.91	3.75	3.96	3.88	3.87	3.7	3.70	3.55	3.44
Fluid flow	m³/h	63	70	78	88	97	102	118	132	150	163	175
Total fluid side presure drop	kPa	76	95	74	77	83	78	93	102	87	80	76
Freecooling performance:												
Freecooling capacity [2]	kW	360	371	442	456	526	534	613	630	716	794	806
Total freecooling temperature (ZET)	°C	6.2	4.7	5.7	4.1	5	4.2	4.1	2.3	2.3	2.7	1.5
Unit EER at ZET point	-	24	26	24	26	31	33	31	35	37	35	38
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	72.6	73.3	73.6	74.3	74.4	74.7	75.3	76.2	76.7	77.2	77.8
Sound Power Level PWL [4]	dB(A)	94.1	94.8	95.6	96.3	96.8	97.1	98	98.9	99.8	100.6	101.2
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72	89/80	98/89	98/89
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	850	850	850	850	850	850	850	850	850	850	850
Power input (each)	kW	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Total power input	kW	12.3	12.3	14.8	14.8	17.3	17.3	19.7	19.7	22.2	24.7	24.7
Total air flow rate	m³/h	173654	173654	208385	208385	243116	243116	277847	277847	312578	347309	347309
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1218	1418	1427	1427
Fluid volume (internal glycol circuit)	l	499	499	599	599	759	759	894	894	1066	1189	1189
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845

Models: NH3***HG0L		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423	14134	15154	15226
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535	16621	17774	17798

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions (1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions (1).

Tab 4.72 - Technical Data - NH3***HG0Q

Models: NH3***HG0Q		065	075	080	090	100	110	125	140	165	180	195
Mechanical cooling performance [1] :												
Cooling capacity	kW	621	686	776	863	956	1006	1160	1288	1460	1593	1780
Compressors power input	kW	157	189	207	245	253	274	316	377	428	485	512
Total power input	kW	164	196	215	254	263	284	328	388	441	500	533
Unit EER	-	3.78	3.5	3.61	3.4	3.64	3.54	3.54	3.31	3.31	3.19	3.34
Fluid flow	m³/h	60	66	75	83	92	97	111	124	140	153	171
Total fluid side presure drop	kPa	69	85	68	69	75	70	83	90	77	71	73
Freecooling performance:												
Freecooling capacity [2]	kW	319	327	390	401	463	469	539	552	626	694	773
Total freecooling temperature (ZET)	°C	4.6	3.1	4	2.3	3.3	2.5	2.4	0.7	0.6	1.0	1.0
Unit EER at ZET point	-	28	31	28	31	38	40	37	42	44	42	40
Sound levels												
Sound Pressure Level SPL [3]	dB(A)	68.4	69.3	69.5	70.4	70.4	70.8	71.4	72.4	72.9	73.4	74.5
Sound Power Level PWL [4]	dB(A)	89.9	90.8	91.5	92.4	92.8	93.2	94.1	95.1	96.0	96.8	97.9
Refrigeration circuits												
Number of refrigeration circuits	#	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge for each circuit	kg	46/45	46/45	59/53	59/53	67/62	67/62	83/72	83/72	89/80	98/89	98/89
Compressors												
Number of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Type	-	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw	Screw/ Screw
Nominal power	HP	125/125	140/140	160/160	180/180	180/210	210/210	240/240	280/280	300/300	320/320	320/320
Fans												
Number of fans	#	10	10	12	12	14	14	16	16	18	20	20
Type	-	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800	S3G800
Wheel nominal diameter	mm	800	800	800	800	800	800	800	800	800	800	800
Rotation speed	1/min	700	700	700	700	700	700	700	700	700	700	700
Power input (each)	kW	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total power input	kW	7.1	7.1	8.5	8.5	9.9	9.9	11.3	11.3	12.8	14.2	20.6
Total air flow rate	m³/h	140528	140528	168634	168634	196739	196739	224845	224845	252950	281056	325179
Evaporator												
Number of evaporators	#	1	1	1	1	1	1	1	1	1	1	1
Type	-	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube	Shell & Tube
Internal volume per circuit (refr.side)	l	43.5	47	51	55	63.5	73.5	73.5	88.5	101.5	115	136
Condensing coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Internal volume (each)	l	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Freecooling coil												
Material tubes/fins	-	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum	Aluminium / Aluminum
Total face area	m²	25	25	30	30	35	35	40	40	45	50	50
Water connections												
Diameter	DN / "	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN125 / 5"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"	DN150 / 6"
Fluid volume (user side)	l	456	456	460	460	1144	1144	1218	1218	1418	1427	1427
Fluid volume (internal glycol circuit)	l	499	499	599	599	759	759	894	894	1066	1189	1189
Dimensions												
Unit length	mm	7026	7026	8296	8296	9566	9566	10836	10836	12106	13376	13376
Unit depth	mm	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350	2350
Unit height	mm	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845	2845

Models: NH3***HG0Q		065	075	080	090	100	110	125	140	165	180	195
Weights												
Net weight	kg	7708	7740	8742	8793	11035	11466	12231	12423	14134	15154	15226
Operating weight	kg	8664	8696	9816	9867	12938	13398	14300	14535	16621	17774	17798

Notes:
(1) : 35°C ambient temperature; 29-20°C fluid inlet/outlet temperature; water; power supply 400V/3ph/50Hz;
(2) : 29°C fluid inlet temperature; 16°C ambient temperature; nominal fluid flow; ethylene glycol 30%;
(3) : The value of SPL is measured in free field conditions and 1 meter from the unit according to ISO 3744 average method, at nominal working conditions (1);
(4) : The value of PWL is calculated in according to ISO 3744 procedure method, at nominal working conditions (1).

Mechanical Specifications

Construction frame and panels

The **Liebert® AFC** series has been designed for outdoor installations.

All the components of the frame are made to withstand the action of atmospheric agents.

The base is made of metal profiles – main beams with 6mm thick, S275JR steel and side beams 4mm thick S355MC steel, fixed by means of special screws or rivets with high mechanical characteristics.

All screws are stainless steel or galvanized type instead rivets are all galvanized.

Bolted lifting brackets in 15mm thick S355J2 steel are provided on the base and side holes (ø56 mm) are provided on the main beams for fixing the anti-vibration mounts to the bottom (ø20 mm), available as an option.

The top frame of the unit supporting the air exchangers and the E. P. are all made of Z275 galvanized sheet metal with thicknesses from 1.2 to 3mm except for the lower longitudinal beams of the top air exchanger frame which are in S275JR 6mm thickness, completely similar to those provided for the base.

The compressors are positioned in a closed compartment (placed in the front side of the unit), protected from external agents and isolated from the air flow to avoid the transmission of noise.

The compressor / s compartment is made entirely of 2mm thick Z275 galvanized steel. The right and left side panels are equipped with waterproof seals and are locked with triangular insert locks (the appropriate key is supplied) for easy and quick disassembly.

In the versions with A2L gas, the compressor compartment is flushed with forced ventilation (ATEX fan) in order to declassify the closed area where are located the compressors themselves.

The compressors are fixed to the base on anti-vibration supports to prevent the transmission of vibrations to the structure.

The compressor box is designed to reduce to the maximum the levels of noise through the use of sound-absorbing/damping materials.

All exposed sheet metal parts are painted directly with polyester powder RAL7032 on zinc-plated Z275 components, for non-galvanized components they are painted with polyester powder RAL7032 after a treatment with a suitable primer; so all parts (galvanized and not galvanized) are set to ensure good corrosion resistance equivalent to a C3 Medium grade (according to ISO 12944) for an application in urban and industrial environments with modest pollution and coastal areas with low salinity.

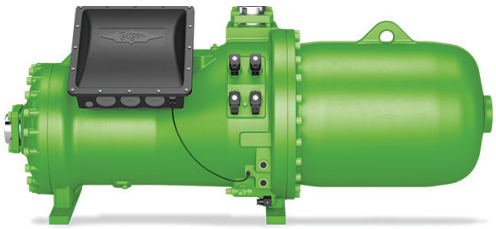
Refrigeration Circuit

The unit is equipped with multiple screw compressors, configured in a single independent refrigeration circuit for each compressor.

Each circuit includes:

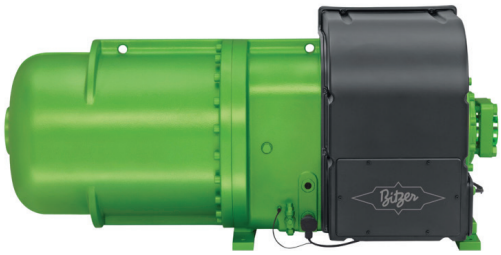
- safety pressure switch for high pressure
- an electronic safety pressure switch for low pressure
- an electronic expansion valve, including a stepper motor with:
  - Continuous adjustment with unlimited adjustment position
  - Extremely high positioning speed;
- Very accurate control on overheating; microprocessor - algorithms highly adjustable and adaptable for the most different load variations (transients).
- a filter dryer with disposable anti-acid solid cartridge, a humidity indicator and liquid sight glass
- high and low pressure safety valves
- charge connections and a manual ON-OFF valve;
- liquid injection circuit for versions with Inverter compressor
- Low pressure switch with manual reset to avoid air entry into refrigerant circuit (only for R1234ze units)

The units are supplied charged with refrigerant R134a/R1234ze and oil as determined in the factory for the operating conditions within the indicated limits.



Type	Semi-hermetic screw compressors Integrated shut-off valve on the discharge line
Safety	Internal safety valve
Protection	Electronic protection controlling: - the temperature of the motor windings - the oil temperature - the screw rotating direction The compressor motors are equipped with protection on all the three phases and are started by their three-pole contactors.
Oil system	Oil heater Oil sight glass Oil level control (optional) Fine filter 10 µm mesh size

Inverter Compressors



Type	Semi-hermetic screw compressors with integrated frequency inverter for variable speed control Integrated solenoid valve for automatic Vi control and for automatic inverter cooling Integrated shut-off valve on the discharge line
Safety	Internal safety valve External rupture disk for A2L refrigerants in case of leakage of inverter refrigerant circuit cooling Line reactor to comply cat. C3 of EN61800-3 and RFI filter to comply cat. C2 of EN61800-3
Protection	Integrated electronic on inverter for protection & controlling of: • the temperature of the motor windings • the oil temperature • minimum oil level • high and low pressure • overcurrent, over and under voltage, phase failure • warnings (or cut out) communication close (or on excess) to the application limits • Inverter electronics temperature monitoring • Oil heater automatic smart control The compressor motor is equipped with protection on all the three phases and is started by the three-pole contactors for safety issues on A2L units.
Monitoring	Data log of all operating parameters with interval about **5 – 10** sec Memory capacity of about **2** weeks Alarms message and statistics of the last **36** days

Electronic expansion valve

The electronic expansion valve used in the **Liebert® AFC** range enables accurate control of the overheating of the gas sucked by the compressor under all load conditions, together with the operation at low condensation and compressor unloading. Under such application conditions a mechanical expansion valve can never reach the performance ensured by an electronic expansion valve (with energy benefits) nor the functional stability, above all during the transients of the load variations (with benefits as for reliability).
The final result of the application of the electronic expansion valve on **Liebert® AFC** is therefore an improved energy operating costs and a higher reliability, thanks to its special adjustment features above all on partial loads, conditions under which every chiller operates for most of the time.**Liebert® AFC** units are equipped with direct expansion, shell and tube type evaporators, designed, constructed, tested (pressure test on both refrigerant and water sides) and documented to comply with PED: 2014/68/EU standards.

Features

The electronic expansion valve used in the **Liebert® AFC** range enables accurate control of the super-heating of the gas under all load conditions. It manage also the operation at low condensation and high compressor choking.
The final result of the application of the electronic expansion valve on **Liebert® AFC** is therefore an improved energy operating costs and a higher reliability, thanks to its special adjustment features above all on partial loads conditions under which every chiller operates for most of the time.

Operation

The superheat setpoint will be automatically adjusted according to the operating conditions and to the application limit of the compressor.
The operating parameters and their programming in the microprocessor dedicated to the EEV control are described in the Vertiv™ iCOM3™ User Manual.

Evaporator

Liebert® AFC units are equipped with direct expansion, shell and tube type evaporators, designed, constructed, tested (pressure test on both refrigerant and water sides) and documented to comply with PED: 2014/68/EU standards.

They incorporate two refrigeration circuits and one water circuit. The shell is fabricated from seamless carbon steel with internally finned copper tubes and tube sheets of heavy gauge carbon steel.

Baffles are of plastic material; heads are constructed of special cast iron, gaskets of an asbestos free compound and bolts of carbon steel. They are externally insulated with closed cell elastomer with high resistance to UV rays HT-type for outdoor installations.

The evaporators are equipped with drainage and vent connections and are protected against freezing by a paddle-type flow switch and an antifreeze sensor directly managed by the microprocessor.

As an option, a thermostatically controlled electric heater is fitted inside the shell to prevent freezing with outdoor temperatures below 0ºC.

Temperature and pressure working limits and pressure test values are indicated below:

Tab. 5.1 - Evaporator working limits

Design temperature	Design pressure		Test pressure	
Min. / Max.	Refrigerant* (R134a)	Water	Refrigerant* (R134a)	Water
-10 / +80 °C	16,0 / 24,5 bar	10,5 bar	17,6 / 27,0 bar	11,5 bar

* 16 bar - 17,6 bar only on evaporator with 660 mm shell diameter

Condensers and Free-cooling coils

Condensing and Freecooling coils are full aluminum micro-channel type (for FC only on Glycol Free versions) and is mounted in modular configuration with multiple “**V**” geometry to allow a larger heat exchange surface.

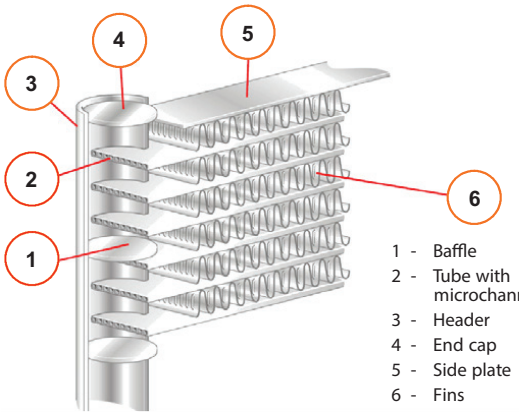
On all other freecooling versions, cooling coils are made with with copper tubes and aluminum fins, to provide a larger heat exchange surface, integrated in in modular configuration with multiple “**V**” geometry with airflow in series with condenser coils

The microchannel coils allow to maximize the heat exchange, increasing the overall efficiency both in mechanical and freecooling mode and at the same time allow to reduce the weight and refrigerant quantity.

The R134a/R513A/R1234ze refrigerant condensation is obtained by multiple microchannel mounted in parallel multiple “**V**” configuration.

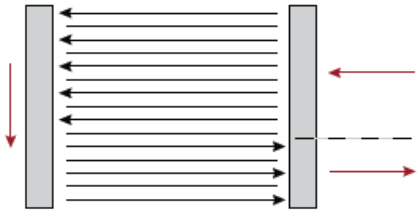
Microchannel Heat Exchanger is a two pass aluminum brazed product; it has better joint connection than mechanically assembled heat exchanger; each component has a specific aluminum alloy chemistry that ensures optimum performance against corrosion; it’s made of:

Construction



1 - Baffle
2 - Tube with microchannels
3 - Header
4 - End cap
5 - Side plate
6 - Fins

Two pass



- tube MPE (Multi Port Extrusion) HA9108;
- fins HA3968;
- header HA3905.

The microchannel condensing heat exchanger design pressure is 30 bar.

Comparing Microchannel technology with traditional condenser made of copper tubes and aluminum fins, there are many benefits, such as:

- Compact solution.
- Minimized weight.
- Reduced pressure drop.
- Increased heat transfer surface.
- Less refrigerant charge.
- No galvanic corrosion due to the presence of a single metal.
- 100% Aluminum, easy to recycle.

Coated coil treatment (optional)

When **Liebert® AFC** model is working in harsh conditions, such as the sea coast and other corrosive environments, an added coating for coil protection is a must. According to environment characteristics, Vertiv™ serves different coating treatment as optional.

For not louvered fin coils:

• Pre-painted aluminum fin (polyester), which charateristics are summarized below

- Corrosion resistance: 1000 h according ASTM B117
- UV resistance: 500h according QUVA UVA 340

For only microchannel coils:

• Full immersion cathodic deposition + top coat (TKPro), which charateristics are summarized below

- Corrosion resistance: 100 gg according SWAAT TEST ASTMG85
- UV resistance OK according ISO 1674-3 QUVB313

For all other air heat exchangers:

• ElectroFin® E-coat coating: a full immersion process where the fins are coated with the aid of electrical power. This guarantees that the complete surface is coated, of a 15-30 micron coating layer, even in the center of the fin.

- Corrosion resistance: 6000 h according ASTM B117
- ElectroFin® + UV top coat protection durability: C5 marine & C5 industrial according ISO 12944-6
- Heat transfer reduction: <1% according AHRI 410

NOTE: *When ElectroFin® E-coat coating is chosen, it needs its own cleaning procedure (Annex: Procedures for cleaning ElectroFin E-coat coated coils) to grant its reliability and performance.*

ElectroFin® E-coat coating is a flexible epoxy polymer coating process engineered specifically for HVAC heat transfer coils.

Freecooling execution

Liebert® AFC models in the 'Freecooling execution' are designed with an integrated freecooling system consisting of:

- cooling coils with copper tubes and aluminium fins, mounted in multiple **V** configuration to provide a larger heat exchange surface
- vent and drainage valves on the freecooling coils
- low pressure drop double 2-way butterfly valve with modulating servo-control

All the freecooling functions are managed by the microprocessor controls, according to ambient conditions and thermal load:
The following working modes are possible, managed by the microprocessor controller according to the ambient conditions of dry bulb temperature, and to the thermal load:

- Freecooling mode: 100% coolant flow first through the free cooling coils and then through the evaporator without operation of the compressors;
- Mixed mode, DX and freecooling: 100% coolant flow first through the freecooling coils and then through the evaporator with partial operation of compressors;
- Mechanical cooling mode (or DX = Direct expansion) mode with compressor operation only: 100% coolant flow through the evaporator;

The precise control of water supply temperature in total freecooling mode is ensure first by the control of fans speed and then 2 way butterfly valve.

Compressor starting and compressor unload, fan speed control, 2-way valve control are managed by the controls with different strategies in order to increase the energy saving to the maximum possible and keeping as much as possible the LWT stability.

Free cooling glycol free system

The units are designed with an integrated freecooling system, made of:

- Cooling coils with aluminium microchannel coils, to provide a larger heat exchange surface, integrated in series with condenser coils.
- Stainless-steel plate heat exchanger sized for a small temperature approach between water and glycol circuit.
- High efficiency circulation pump with integrated inverter.
- Fine mesh glycol filter with stainless steel body and replaceable core.
- A mixture of Glycol and Water as fluid to prevent the risk of freezing even if the unit is stopped with low external temperature.

The precise control of water supply temperature in total freecooling mode is ensure by the control of fans speed and no-glycol inverter pump speed with dedicated control algorithm in order to increase the energy saving to the maximum possible.

Fans and acoustic configuration

Fans are axial type, with die-cast aluminium blades statically and dynamically balanced and directly coupled to an EC motor with external rotor. Fans have Electronically Commutated motors (EC-Fans) with IP54 protection, Class F winding insulation and internal thermal protection.

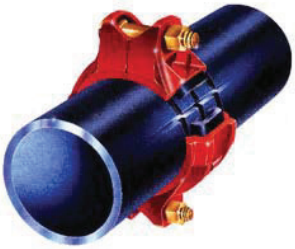
Fans are complete with safety protection grilles and high efficiency nozzles with a specific design to eliminate cross and recycling airflow. There are stator blades that allow the redirection of the air flow, with a consequent increase in efficiency and noise reduction.

Fan speed control are achieved by means of a continuous fans speed regulation, managed directly by iCOM3™ control for higher energy saving and lower sound emission spectrum

Two version versions are available more than the standard ones, for reaching the efficiency or the best noise keeping the same airflow.

On **Low Noise version**, fans speed and the relevant airflow is reduced for keeping the sound emission according reduced noise levels.

Hydraulic circuit



The hydraulic circuit utilize carbon steel pipes connected with grooved-end fittings and couplings; gaskets are made of EPDM. This arrangement permits compensation for thermal expansion, reduces noise and vibration propagation through the hydraulic pipelines and facilitates ease of maintenance.

Insulation of the hydraulic circuit are made of close cell synthetic elastomer with high resistance to UV rays HT type for outdoor installations.

Recirculating pumps

All models of the **Liebert® AFC** series can be equipped with double factory-connected water circulation pumps. On each unit it is possible to select the type of pump (low or high head) both in the standard version and with inverter and integrated electronic regulation. All pumps are dynamically balanced according to ISO 1940 class 6.3. The electronic pump regulation algorithm allows you to modulate the pump speed so as to keep the flow rate constant through the evaporator even when the hydraulic load changes: this allows a significant energy saving, variable according to the applications. In particular in the Freecooling units this beneficial effect occurs especially in the summer season when the Freecooling battery is short-circuited.

The inverter pump can also be regulated according to the “variable flow” logic managed according to particular algorithms determined by plant requirements; the pump and machine safety devices and protections are always guaranteed.

The pumps are suitable for operation with ethylene glycol-water mixture up to 35-65% by weight and refrigerant fluid temperatures up to 4°C. The pumps are of the monobloc centrifugal type, with two-pole electric motor with IP54 protection, Class F insulation and at least IE3 efficiency class.

Motors with this efficiency class (the highest on the market) not only guarantee greater energy savings compared to pumps with a lower efficiency class, but also allow a quieter operation of the electric motor and allow to reach very high limits use at room temperature (up to 60°C). The pump housings are made of cast iron, as well as the impellers, the stainless-steel shafts and the mechanical seals in silicon carbide / EPDM with dimensions according to EN12756, suitable for use of water mixtures containing ethylene glycol.

The hydraulic circuit of the pump includes a check valve on the delivery of each pump. The pump body, the lantern, the stator body and the fixing bolts are subjected to electrophoretic painting; this allows the use of these pumps in outdoor environments subject to atmospheric agents without any problem of corrosion. Each pump is also equipped with an automatic electrical protection switch.

The microprocessor controls manage the rotation and stand-by of the pumps and automatically start the pump in stand-by in case of failure of the primary one.

If the electronic inverter pump is replaced, all the parameters must be set; this intervention must be carried out by a Vertiv™ expert technician.

Hydraulic performance (available net pressure, pump power input) are declared according to ISO9906.

Hydraulic Kit

The unit is equipped with an expansion vessel - charged at 1.5bar and with 10bar maximum operating pressure – and a safety valve set at 6.0bar.

Variable flow

Unit can operate in variable flow in a passive way, adapting its thermal regulation logic to the upcoming variable flow control by an external control (external pump). For this configuration it must be ensured that that the water flow variations are within defined limits: minimum flow, maximum flow and maximum flow variation speed.

Flow rates below the minimum values can result in laminar flow through the exchangers causing freeze-up problems, scaling, efficiency drop down and poor control. Flow rates above the maximum values will result in unacceptable pressure drops and can cause excessive erosion, potentially leading to failure.

Unit controller manages the minimum and maximum limits of flow rate through the embedded flow meter as well as its fluctuations; if the unit is working next to indicated limits, warning and then alarm are generated.

Electrical Panel

The electrical panel is complied with IEC standards (EN60204-1). The panel shall have a degree of protection equivalent to IP54 and is cooled by an internal fan (with thermostat). For low ambient application (down to -5°C) an electrical heater is included inside.

Supply 400+/- 10% V/3/50HZ + PE.

Auxiliary supply circuit at 230V/1/50HZ and 24V/1/50HZ.

Wired according to safety IEC norms (EN60204-1) with a door-interlocked main switch on the Power panel.

Main switch for auxiliary circuit and fast start ramp

Protection fuses for compressors.

Protection MCBs for fans and pumps;

Contactors for compressors and pumps.

Relay for checking phase sequence, minimum voltage, loss one or more phase;

Compressor manual operation through iCOM3™ controller.

For fast start option, a double power supply is installed: the main for compressors and pumps, the secondary for iCOM3™ control that need an external UPS. Also, in case of external UPS power unavailability, the iCOM3™ controller, is powered by an internal Ultra-capacitor which stores the energy taken from the mains line and makes it available during the power failure.

Controls

Units are equipped with an on-board control iCOM3™ type able to secure system optimization and energy savings.

On board control allow the programming of temperature and pressure thresholds. All the set-up is possible from Graphic display, through symbols and codes, ensures a reliable and flexible man-machine interface.

- The standard software includes special control algorithms that ensure real energy savings and enhance the reliability of the full system.
- Sequential auto-restart timer allows phased units restart after power failure.
- Double / shift set point
- The condenser fan speed control ensures to run the compressors always with optimum working efficiency.
- All settings shall be protected through a 3-Level Password system.
- Input for Remote on-off and Volt-free contacts for simple remote monitoring of alarms and warnings are available.

Packing

Units are shipped with plastic film protection.

Warranty Clauses

The warranty does not apply for any damage or malfunction that may occur during or as a result of operation outside of the application range. The warranty does not apply for freecooling units damaged by frost if the hydraulic circuit has not been charged with a water-glycol mixture with suitable percentage for the min. temperatures in the installation site. The company is not responsible for damage due to incorrect or improper use of the product and it reserves the right to change technical specifications without any prior notice.

Final Tests and Reference Standards

The units are designed, manufactured and tested in compliance with the European directives 2006/42/EC; 2014/30/EU; 2014/35/EU; 2014/68/EU.
The machine is supplied with a final test certificate and a declaration of conformity with the norms.
All **Liebert® AFC** units are " CE " marked.

Product Standards and Approvals

The manufacturer's products installed and operated in compliance with this document and the Product Documentation, conform to the Low Voltage directive 2014/35/EU, the EMC directive 2014/30/EU and the Pressure Equipment directive 2014/68/EU. Products are designed to comply with an IP21 rating. This product is cULus / ETL / MET (TBC) listed for the appropriate voltage models and certificates will be made available on request.

Accessories

Pumps group

Available head pressure values are declared at the unit's hydraulic connections and are referred to the nominal working conditions of each unit.

Please contact us for different fluid flow rates or head pressures. All pumps can work with up to 35 % ethylene glycol percentage by weight.

In all chiller versions and most freecooling models one pump is operating and one is in stand-by, as indicated by (1+1); in some freecooling models both pumps can be operating simultaneously, as indicated by (2). In the version "Inverter pump", (inverter pump available up to the max. power of 22 kW) one inverter pump is operating and a traditional pump is in stand-by (1+1). The indicated hydraulic performance refers to the inverter pump in their max. capacities (if available); obviously, they will adapt from such values to the hydraulic load required by the user circuit and by the chiller inner circuit; in case of freecooling unit, they will adapt their performance so as to keep the flow rate crossing the evaporator steady with relevant energy saving.

Table 5.2 – (2 Poles) Standard head pressure Pump Option Standard ΔT *

Freecooling Models	FH4/FH3	065 SG0	075 SG0	080 SG0	090 SG0	100 SG0	110 SG0	125 SG0	140 SG0
	FIZ	065 SG0	075 SG0	080 SG0	085 SG0	095 SG0	110 SG0	125 SG0	-
Pump model	-	65-125/137	65-125/144	65-125/144	65-160/173	80-160/151	80-160/161	80-160/161	80-160/167
Nominal motor power	kW	7,5	11,0	11,0	15,0	15,0	18,5	18,5	22,0
Sound power level	dB(A)	73,0	75,0	75,0	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	179	224	224	234	294	309	309	325
Freecooling Glycol-Free Models	**NH4/NH3**	**065 SG0**	**075 SG0**	**080 SG0**	**090 SG0**	**100 SG0**	**110 SG0**	**125 SG0**	**140 SG0**
	NIZ	**065 SG0**	**075 SG0**	**080 SG0**	**085 SG0**	**095 SG0**	**110 SG0**	**125 SG0**	**-**
Pump model	-	65-125/137	65-125/144	65-125/144	65-160/173	80-160/151	80-160/151	80-160/161	80-160/161
Nominal motor power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5	18,5
Sound power level	dB(A)	73,0	75,0	75,0	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	179	224	224	234	294	294	309	309
Chiller Models	**CH4/CH3**	**065 SG0**	**075 SG0**	**080 SG0**	**090 SG0**	**100 SG0**	**110 SG0**	**125 SG0**	**140 SG0**
	CIZ	**065 SG0**	**075 SG0**	**080 SG0**	**085 SG0**	**095 SG0**	**110 SG0**	**125 SG0**	**-**
Pump model	-	65-125/127	65-125/127	65-125/137	65-125/144	80-160 /147-127	80-160 /147-127	80-160/151	80-160/151
Nominal motor power	kW	5,5	5,5	7,5	11,0	11,0	11,0	15,0	15,0
Sound power level	dB(A)	73,0	73,0	73,0	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	169	169	179	224	284	284	294	294

* data referred to each pump at nominal design conditions

Table 5.3 – (2 Poles) Standard head pressure Pump Option High ΔT *

Freecooling Models	FH4/FH3	065 HG0	075 HG0	080 HG0	090 HG0	100 HG0	110 HG0	125 HG0	140 HG0
	FIZ	065 HG0	075 HG0	080 HG0	085 HG0	095 HG0	110 HG0	125 HG0	-
Pump model	-	65-125/127	65-125/137	65-125/137	65-125/144	65-160/157	65-160/157	80-160/151	80-160/151
Nominal motor power	kW	5,5	7,5	7,5	11,0	11,0	11,0	15,0	15,0
Sound power level	dB(A)	73,0	73,0	73,0	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	169	179	179	224	275	275	294	294
Freecooling Glycol-Free Models	**NH4/NH3**	**065 SG0**	**075 SG0**	**080 SG0**	**090 SG0**	**100 SG0**	**110 SG0**	**125 SG0**	**140 SG0**
	NIZ	**065 SG0**	**075 SG0**	**080 SG0**	**085 SG0**	**095 SG0**	**110 SG0**	**125 SG0**	**-**
Pump model	-	65-125/ 120-110	65-125/ 127	65-125/ 127	65-125/ 127	65-125/ 127	65-125/ 137	65-125/ 144	80-160/ 151
Nominal motor power	kW	4,0	5,5	5,5	5,5	5,5	7,5	11,0	15,0
Sound power level	dB(A)	73,0	73,0	73,0	73,0	73,0	73,0	75,0	75,0
Additional unit weight (single pump option)	kg	158	169	169	169	223	233	278	294
Chiller Models	**CH4/CH3**	**065 SG0**	**075 SG0**	**080 SG0**	**090 SG0**	**100 SG0**	**110 SG0**	**125 SG0**	**140 SG0**
	CIZ	**065 SG0**	**075 SG0**	**080 SG0**	**085 SG0**	**095 SG0**	**110 SG0**	**125 SG0**	**-**
Pump model	-	65-125/ 120-110	65-125/ 120-110	65-125/ 127	65-125/ 127	65-125/ 127	65-125/ 137	65-125/ 144	80-160/ 147-127
Nominal motor power	kW	4,0	4,0	5,5	5,5	5,5	7,5	11,0	11,0
Sound power level	dB(A)	73,0	73,0	73,0	73,0	73,0	73,0	75,0	75,0
Additional unit weight (single pump option)	kg	158	158	169	169	223	233	278	284

Freecooling Models	FH4/FH3			165 HG0	180 HG0	195 HG0
	FIZ	140 HG0	150 HG0			
Pump model	-	80-160/151	80-160/161	80-160/161	80-160/161	80-160/167
Nominal motor power	kW	15,0	18,5	18,5	18,5	22,0
Sound power level	dB(A)	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	294	309	309	309	325
Freecooling Glycol-Free Models	**NH4/NH3**			**165 HG0**	**180 HG0**	**195 HG0**
	NIZ	**140 HG0**	**150 HG0**			
Pump model	-	80-160/147-127	80-160/147-127	80-160/147-127	80-160/151	80-160/151
Nominal motor power	kW	11,0	11,0	11,0	15,0	15,0
Sound power level	dB(A)	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	284	284	284	294	294
Chiller Models	**CH4/CH3**			**165 HG0**	**180 HG0**	**195 HG0**
	CIZ	**140 HG0**	**150 HG0**			
Pump model	-	80-160/147-127	80-160/147-127	80-160/147-127	80-160/147-127	80-160/151
Nominal motor power	kW	11,0	11,0	11,0	11,0	15
Sound power level	dB(A)	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	284	284	284	284	294

* data referred to each pump at nominal design conditions

Table 5.4 – (2 Poles) High head pressure Pump Option Standard ΔT *

Freecooling Models	FH4/FH3	065 SG0	075 SG0	080 SG0	090 SG0	100 SG0	110 SG0	125 SG0	140 SG0
	FIZ	065 SG0	075 SG0	080 SG0	085 SG0	095 SG0	110 SG0	125 SG0	-
Pump model	-	65-160/157	65-160/173	65-160/173	65-160/177	80-160/161	80-160/167	80-160/167	80-160/177
Nominal motor power	kW	11,0	15,0	15,0	18,5	18,5	22,0	22,0	30,0
Sound power level	dB(A)	75,0	75,0	75,0	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	221	234	234	247	309	325	325	440
Freecooling Glycol-Free Models	**NH4/NH3**	**065 SG0**	**075 SG0**	**080 SG0**	**090 SG0**	**100 SG0**	**110 SG0**	**125 SG0**	**140 SG0**
	NIZ	**065 SG0**	**075 SG0**	**080 SG0**	**085 SG0**	**095 SG0**	**110 SG0**	**125 SG0**	**-**
Pump model	-	65-160/157	65-160/173	65-160/173	65-160/177	80-160/161	80-160/161	80-160/167	80-160/167
Nominal motor power	kW	11,0	15,0	15,0	18,5	18,5	18,5	22,0	22,0
Sound power level	dB(A)	75,0	75,0	75,0	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	221	234	234	247	309	309	325	325
Chiller Models	**CH4/CH3**	**065 SG0**	**075 SG0**	**080 SG0**	**090 SG0**	**100 SG0**	**110 SG0**	**125 SG0**	**140 SG0**
	CIZ	**065 SG0**	**075 SG0**	**080 SG0**	**085 SG0**	**095 SG0**	**110 SG0**	**125 SG0**	**-**
Pump model	-	65-125/137	65-125/144	65-125/144	65-160/173	80-160/151	80-160/151	80-160/161	80-160/161
Nominal motor power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5	18,5
Sound power level	dB(A)	73,0	75,0	75,0	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	179	224	224	234	294	294	309	309

* data referred to each pump at nominal design conditions

Table 5.5 – (2 Poles) High head pressure Pump Option High ΔT *

Freecooling Models	FH4/FH3	065 HG0	075 HG0	080 HG0	090 HG0	100 HG0	110 HG0	125 HG0	140 HG0
	FIZ	065 HG0	075 HG0	080 HG0	085 HG0	095 HG0	110 HG0	125 HG0	-
Pump model	-	65-125/144	65-160/157	65-160/157	65-160/173	65-160/173	65-160/177	80-160/167	80-160/167
Nominal motor power	kW	11,0	11,0	11,0	15,0	15,0	18,5	22,0	22,0
Sound power level	dB(A)	75,0	75,0	75,0	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	224	221	221	234	288	301	325	325
Freecooling Glycol-Free Models	**NH4/NH3**	**065 HG0**	**075 HG0**	**080 HG0**	**090 HG0**	**100 HG0**	**110 HG0**	**125 HG0**	**140 HG0**
	NIZ	**065 HG0**	**075 HG0**	**080 HG0**	**085 HG0**	**095 HG0**	**110 HG0**	**125 HG0**	**-**
Pump model	-	65-125/137	65-125/144	65-125/144	65-125/144	65-125/144	65-125/144	65-160/173	80-160/161
Nominal motor power	kW	7,5	11,0	11,0	11,0	11,0	11,0	15,0	18,5
Sound power level	dB(A)	73,0	75,0	75,0	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	179	224	224	224	278	278	288	309
Chiller Models	**CH4/CH3**	**065 HG0**	**075 HG0**	**080 HG0**	**090 HG0**	**100 HG0**	**110 HG0**	**125 HG0**	**140 HG0**
	CIZ	**065 HG0**	**075 HG0**	**080 HG0**	**085 HG0**	**095 HG0**	**110 HG0**	**125 HG0**	**-**
Pump model	-	65-125/127	65-125/137	65-125/137	65-125/137	65-125/144	65-125/144	65-160/173	80-160/151
Nominal motor power	kW	5,5	7,5	7,5	7,5	11,0	11,0	15,0	15,0
Sound power level	dB(A)	73,0	73,0	73,0	73,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	169	179	179	179	278	278	288	294

Freecooling Models	FH4/FH3			165 HG0	180 HG0	195 HG0
	FIZ	140 HG0	150 HG0			
Pump model	-	80-160/151	80-160/161	80-160/161	80-160/161	80-160/167
Nominal motor power	kW	15,0	18,5	18,5	18,5	22,0
Sound power level	dB(A)	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	294	309	309	309	325
Freecooling Glycol-Free Models	**NH4/NH3**			**165 HG0**	**180 HG0**	**195 HG0**
	NIZ	**140 HG0**	**150 HG0**			
Pump model	-	80-160/147-127	80-160/147-127	80-160/147-127	80-160/151	80-160/151
Nominal motor power	kW	11,0	11,0	11,0	15,0	15,0
Sound power level	dB(A)	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	284	284	284	294	294
Chiller Models	**CH4/CH3**			**165 HG0**	**180 HG0**	**195 HG0**
	CIZ	**140 HG0**	**150 HG0**			
Pump model	-	80-160/147-127	80-160/147-127	80-160/147-127	80-160/147-127	80-160/151
Nominal motor power	kW	11,0	11,0	11,0	11,0	15
Sound power level	dB(A)	75,0	75,0	75,0	75,0	75,0
Additional unit weight (single pump option)	kg	284	284	284	284	294

* data referred to each pump at nominal design conditions

Anti-vibration support

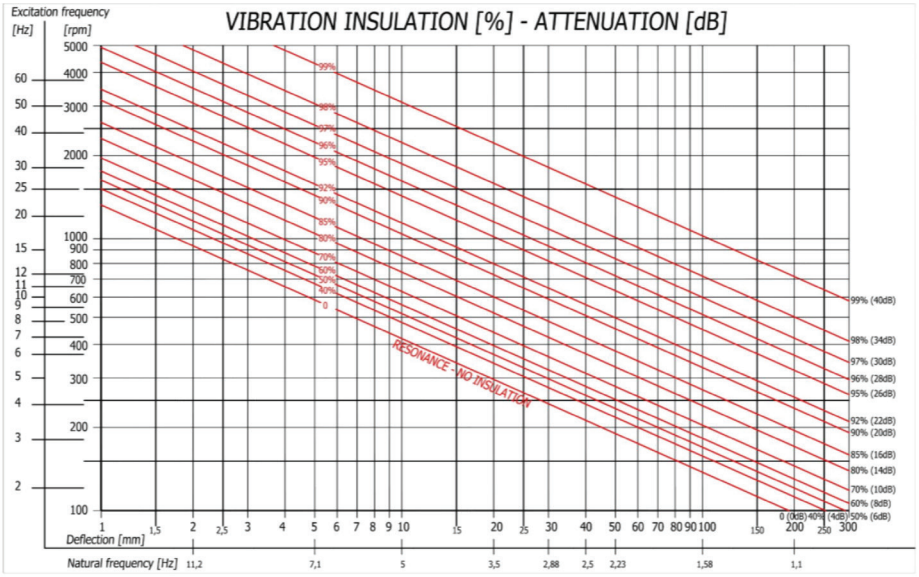
The anti-vibration supports have the function of isolating the structure, on which the chiller is placed, from the vibrations created by the chiller itself.

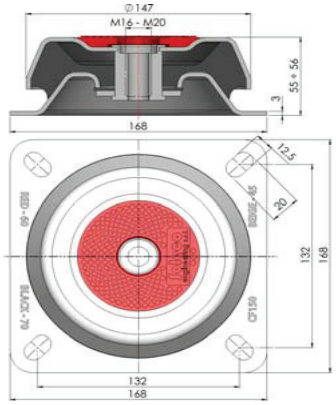
They can be of the rubber or spring type, sized and selected on the basis of the expected level of insulation calculated starting from their elastic characteristics and the weight supported by each of them.

There are therefore various kits of vibration dampers combined with each chiller, identifiable in a dedicated manual which also illustrates the procedures for their correct installation.

Unit	10 - 12 fans	6 stands
	14 - 16 fans	8 stands
	18 - 20 fans	10 stands

The rubber antivibration mounts are able to isolate vibrations with an efficiency of about 70-80% for forces of 20 Hz (1200 RPM)
The spring antivibration mounts are able to isolate vibrations with an efficiency of about 90% for forces of 14 Hz (850 RPM)
Below are the dimensional and mechanical characteristics of said anti-vibration





Elastic body: Natural rubber.

Operating temperatures: -20°C +90°C

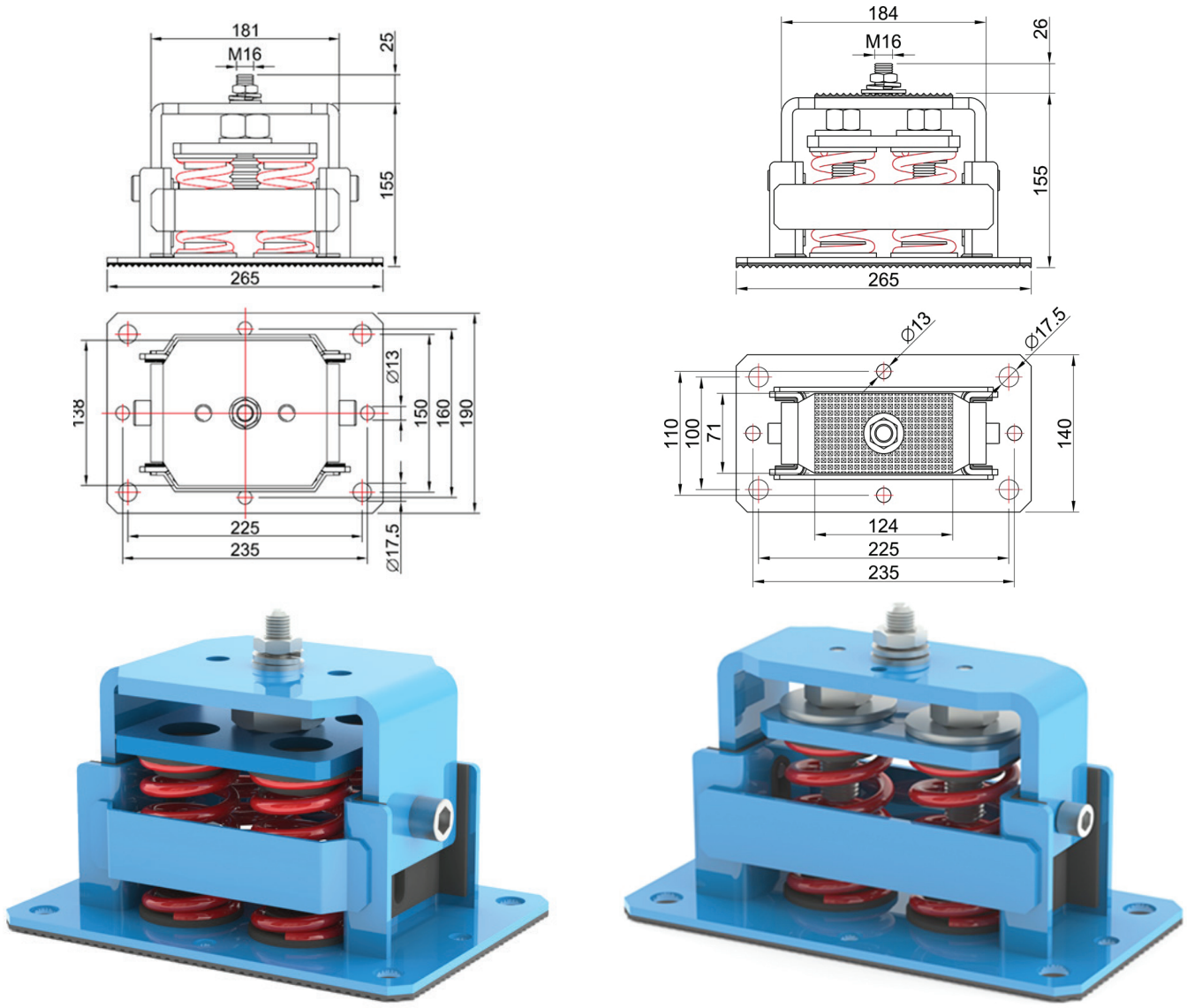
Metal body: Zinc UNI ISO 2081Fe/Zn 15c Awhite Steel UNI EN 10111 DD13

Upper pad: Thermoplastic elastomer **TPV 80shA**, coloured depending on the hardness of the inner elastic body:

- 45shA **Beige**
- 60shA **Red**
- 70shA **Black**
- 80shA **Blue**

Each kit is complete with stainless steel fixing screws and plain washers for unit assembly.

Antivibration mounth with antiseismic structure



- **Spring** in harmonic steel UNI EN 10270 1 SH with surface protected by cataphoretic treatment;
- **8 / 4 nylon disks** lock the spring to the structure and prevent the metal contact;
- **Container structure:** base & upper plates made with S235JR UNI EN 10025 steel sandblasted, protected by cataphoretic treatment and epoxy powder coated:
  - **Base plate** with holes for the anchorage to the floor, welded special profile guides to consent upper plate sliding and barriers to prevent the escape of the spring;
  - **Upper plate** in folded plate 10 mm thick with 2 lateral M16 holes;
- **Fixation to the unit** by Central M16 threaded rod in stainless steel AISI304;
- **Intermediate plate** in sandblasted steel, protected by cataphoretic treatment and coated with epoxy powder;
- **Rod and nut M30 / M20** positioned under the upper plate, to control the level of the machine;
- **2 elastomer guide profiles** inside the steel guide, to prevent the metal contact and assure insulation continuity even with transversal thrusts;
- **Neoprene pad** placed under the base plate with deformable reliefs surface permits to the loaded antivibration mount to stand for friction;
- **2 lateral M16 / M12 screws** to block the lid to the base and prevent spring displacement.

Power factor correction with capacitors (option)

Caution: Discharge and short circuit capacitor before handling!

This option is not available for inverter compressors.

Enhancing power quality – improvement of power factor – saves costs and ensures a fast return on investment. In power distribution networks, PFC focuses on the power flow cos (ϕ) and the optimization of voltage stability by generating reactive power – to improve voltage quality and reliability at distribution level.

PhaseCap capacitors in cylindrical aluminum cases have been designed for power factor correction in low-voltage applications. Dielectric is made of propylene film.

Safety:

- Self-healing
- Overpressure disconnector
- Shock hazard protected terminals
- Discharge resistor pre-mounted
- IP54 with terminal CAP
- -40D execution with -40° / +55°C min/max working air temperature

Capacitors are activated when the compressors are operating; their contactors are selected for this particular use in combination with discharge throttle.

A relay normally open has to be managed by customer in order to enable their operation, so it's necessary to read carefully the following notes before enabling their full functionality.

It's recommended to disable capacitors:

- After power off and before switching the power from the main line to the genset power line
- When there is low power input quality as:
  - transient over under voltage
  - transient over current
  - Interaction with other reactive power components, and also parasitic capacitances (cable) or inductivities in common circuits
  - network harmonics, resonances created by harmonics or flicker even when they occur only briefly or cyclically
  - network harmonics are normally produced in the operation of electric loads with a non linear voltage / current characteristic as rectifiers and inverters for drives, welding apparatus and uninterruptible power supplies

Harmonics and relevant resonance may cause very high overcurrents which can lead to capacitor failures, and worst case, to explosion and fire.

Energy and flow meter

The electronic devices are a full system enabling the following functions:

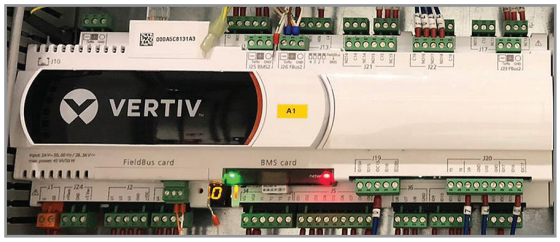
- measuring and monitoring electrical values;
- measuring the fluid flow of the unit;
- counting the used electric power;
- protecting the system against electric supply quality problems (optional).

Other Accessories

The following accessories can be installed as option:

- Ten inch touch screen, fitted on board.
- Metal filters protecting the coils.
- Expansion tank, evaporator and piping heaters to protect these components against frost.
- • Monitoring device according to different communications standards.
- "**Y**"-shaped mechanical filter protecting the hydraulic circuit (recommended to aid the plate exchanger maintenance-cleaning).
- Top extension for electrical pan

6 Controls



The **Liebert® AFC** water chillers are controlled by the Vertiv™ iCOM3™ microprocessor, managing all of the unit operating conditions.

The user can change and/or modify the operating parameters through the display keyboard installed on the electrical panel.

The electrical control board with fan is equipped with all the safety and operating devices needed for reliable automatic operation.

See the *Vertiv™ iCOM3™ User Manual* for details.

NOTICE

The **Liebert® AFC** are equipped with their own microprocessor control for the water temperature adjustment.

There is no connection for a remote ON-OFF control. Any modification is forbidden.

Protective Functions

The **Liebert® AFC** water chillers are automatically protected through a series of warning and alarm to prevent damages to the chiller itself:

Pressure control	High pressure and low pressure alarm
Out of Envelope alarm	Modulation of capacity based on the value of high pressure, low pressure, superheat and subcooling and the operating map of the compressor installed
Oil level	Low level alarm
Refrigerant charge check function	Monitoring of the subcooling value with warning or alarm depending on the working conditions
Compressors	The compressors are equipped with an electronic protection device blocking their start if the phase sequence is not correct, or stopping their operation if a thermal relay intervenes. This device is essential for the integrity of the mechanical and electrical components of the compressors. In case of stop due to this device intervention: 1. Isolate this device 2. Remove the causes of the lock-out 3. Reset the device by the Vertiv™ iCOM3™

Tab 6.1 - Technical Data - Vertiv™ iCOM™ for Liebert® AFC

Technical Data	Vertiv™ iCOM™
Flash memory	128 Mbit
Microcontroller	ARM9 200MHz
Analogue Input	10x0- 1V, 0- 5V, 0- 10V, 0- 20mA, 4- 20mA, NTC, PTC, DI (configurable)
Digital Input	20 x opto- coupled
Analogue Output	4x0- 10V, 2x0- 10V, 4- 20mA, PWM, Relay (configurable)
Digital Output	12 Relay output 5A and 3 relay output 8A
USB port	1
Ethernet network connector	1 RJ45 socket
CAN bus	1 Disconnectable screw connector
Rermote LCD display	1 Dedicated connector
RS 485	1 Master+ 1 Slave

10” Touch Display

(special option fitted on Panel)

The Touch display featuring a 24h / 7 days graphic record of controlled parameters as well as the last 200 events occurred.

- Display (TFT Color-LED 1280 x 800 pixel).
- System Window: system operation status at a glance.
- Self - explanatory icons: they are used for the Menu-Layout of the Display.
- Status Report of the latest 200 event/messages of the unit/system.
- Four different Graphic Data Records.
- Timer and Date mode (electronic timer included in the software).
- Semi or full manual mode software management including all safety devices.
- 4-Level passwords system to protect all the settings.
- Ergonomic design for use also as portable device (start-up and “flying connections” by service personnel).

Display / Backlight TFT Color - LED	Colors 16M
Resolution 1280X800	Diagonal (inches) 10.1” widescreen
Dimming yes	Flash 4GB
SD card slot yes	RAM 1GB
Serial Port RS232, RS485, RS422 SW configurable	USB port 2 Host interface version 2.0 max. 500mA
Ethernet port 2 10/100Mb, 1 10/100/1000Mb	Expansion slot 2 Optional Plugin
Battery rechargeable	Real Time Clock yes
Voltage 24Vdc (10-32Vdc accepted range)	Current rating (at 24VDC) 1.00A
Weight 1.7 Kg	Size 282mm * 197mm (cut out 271mm * 186mm)

TOUCH SCREEN DISPLAY TECHNICAL DATA :

Liebert® AFC Connectivity

The control and Touch Display allow Connectivity with superior levels of control and supervision systems:

Available connectivity protocols

- WEB
- MODBUS on RS485 and Over-IP
- BACnet MS/TP and IP
- SNMP

Liebert® AFC can support as optional devices:

- **ENERGY METER** which provides the instant electrical power consumption reading (including primary pump consumption if this is integrated in the unit)
- **CHILLED WATER FLOW METER** which provides the chilled water flow speed (m/s)
- **ADIABATIC FLOW METER** which provides the flow reading (l/h) on adiabatic side (only if adiabatic tanks are present)

IF CHILLED WATER FLOW METER IS PRESENT UNIT CONTROL IS ABLE TO ELABORATE THE FOLLOWING CALCULATED DATA OUTPUT

- Total Capacity (KW)
- Mechanical Capacity (KW)
- Free cooling Capacity (KW)

IF BOTH CHILLED WATER FLOW METER AND ENERGY METER ARE PRESENT UNIT CONTROL IS ALSO ABLE TO ELABORATE THE FOLLOWING CALCULATED DATA OUTPUT

- EER (including primary pump consumption if this is integrated in the unit)
- pPUE (including primary pump consumption if this is integrated in the unit)

IF BOTH CHILLED WATER FLOW METER AND ADIABATIC WATER METER ARE PRESENT UNIT CONTROL IS ABLE TO ELABORATE THE FOLLOWING CALCULATED DATA OUTPUT

- WUE

Where:

Capacity depends on instant values on fluid flow, temperature and glycol percentage (necessary to set on unit control)

EER: is a ration instant Total Capacity and instant Total Electrical Power Consumption readings (in the same time period)

pPUE = [(1) + (1/EER)]

WUE = (adiabatic water meter flow instant) / (instant total Capacity) [lt/(h*KW)] with instant readings in the same time period.

All data outputs are calculated using instant values and also the site operating conditions cannot ensure stable measurements, whereby they can provide only an indicative value. These values must not be considered valid as official performance measurements due to conditions of measurement and precision of the instruments which are different from laboratory measurement conditions and instruments.

Performance Adjustment Factors

Correction Factors

Glycol mixture correction factors

The water glycol mixtures are used as a thermal carrier fluid, in very cold climates with temperatures below 0°C. The use of low freezing point mixtures causes a modification in the main thermodynamic properties of the units.

The main parameters affected by the use of glycol mixtures are the following:

- Cooling capacity
- Mixture volumetric flow
- Pressure drop
- Compressor power input

In the table below are reported correction factors referred to the most common ethylene glycol mixtures.

Tab. 7.1 - Chiller table

Ethylene glycol [% in weight]		0	10	20	30	40	50
Freezing temperature	°C	0	- 4,4	- 9,9	- 16,6	- 25,2	- 37,2
Refrigeration capacity correcting factor	F3	1	0,987	0,977	0,969	0,958	0,950
Mixture volume flow rate correcting factor	F4	1	1,046	1,080	1,098	1,150	1,210
Mixture side pressure drop correcting factor	F5	1	1,053	1,109	1,168	1,234	1,311
Compressor power input correcting factor	F6	1	0,995	0,990	0,990	0,985	0,975

Tab. 7.2 - Freecooling table

Ethylene glycol [% in weight]		0	10	20	30	40	50
Freezing temperature	°C	0	- 4,4	- 9,9	- 16,6	- 25,2	- 37,2
Refrigeration capacity correcting factor	F3	1,032	1,023	1,013	1	0,989	0,981
Mixture volume flow rate correcting factor	F4	0,911	0,926	0,956	1	1,048	1,102
Mixture side pressure drop correcting factor	F5	0,856	0,902	0,950	1	1,056	1,122
Compressor power input correcting factor	F6	1,010	1,010	1,005	1	0,995	0,985

We indicate as R0, V0, P0 respectively the unit capacity, volumetric flow rate and compressor power input with 0% ethylene glycol on Chiller models or 30% ethylene glycol on Super chiller models; when we use glycol mixtures with different % with the same inlet and outlet temperatures at the evaporator, the performance will vary as follows:

- Refrigeration capacity = R0 x F3
- Volumetric flow rate = V0 x F3 x F4
- Mixture pressure drop=DP1 x F5, where DP1 is the unit water pressure drop for the new volumetric mixture flow rate
- Compressor power input = P0 x F6

Fouling: Correction factors

Tab. 7.3 - Fouling correction factors

Fouling factors [10^{-4} m² °C/W]	Correction factors	
	F1a refrigeration capacity correction factor	F2a compressor power input correction factor
0,18	1	1
0,44	0,996	0,999
1,32	0,984	0,994

Unit performance reported in the tables are given for the condition exchanger with fouling factor corresponding at 0,18 10^{-4} m²°C / W. For different fouling factor values, performances should be corrected with the correction factors shown above. For optimum unit operation, proper water treatment must be maintained. Scaling and dirt in a system will vary significantly depending on local water conditions. Water treatment should be based on characteristics of the area's water. Improper or untreated water can lead to scale build up, erosion and corrosion in the evaporator.

Vertiv™ will not accept responsability for poorly or improperly treated water.

Sea level: Correction factors

Tab. 7.4 - Sea level correction factors

Elevation above sea level [meters]	Correction factors	
	F1b refrigeration capacity correction factor	F2b compressor power input correction factor
0	1	1
600	0,997	1,004
1200	0,993	1,007
1800	0,988	1,015
352	0,915	0,965

Unit performance reported in the tables are given for sea level conditions.
For different altitudes, performances should be corrected with the correction factors shown above.

8 Variable Primary Flow

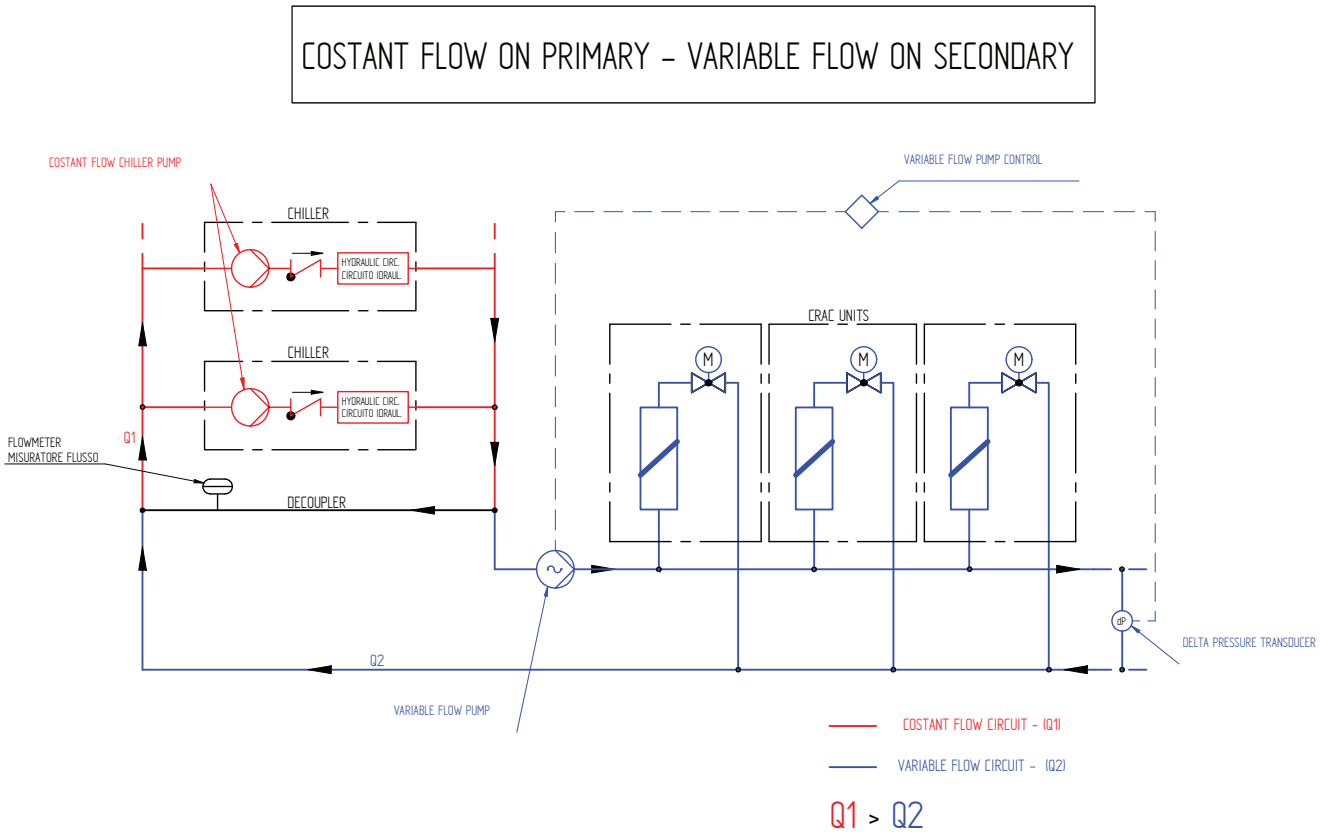
Variable Primary Flow

General Overview of VPF Hydronic Systems

The variable-primary-flow (VPF) hydronic system is an evolution of the concept of the constant primary–variable secondary design, more commonly known as the “decoupled” system.

A comparison of the hydraulic schematics in Figures 1 and 2 shows the similarities and differences between “decoupled” and VPF systems.

Figure 8.1



The “decoupled” system shown in *Figure 8.1* uses constant water flow through each chiller and variable water flow through each CRAC unit to satisfy the data center loads.

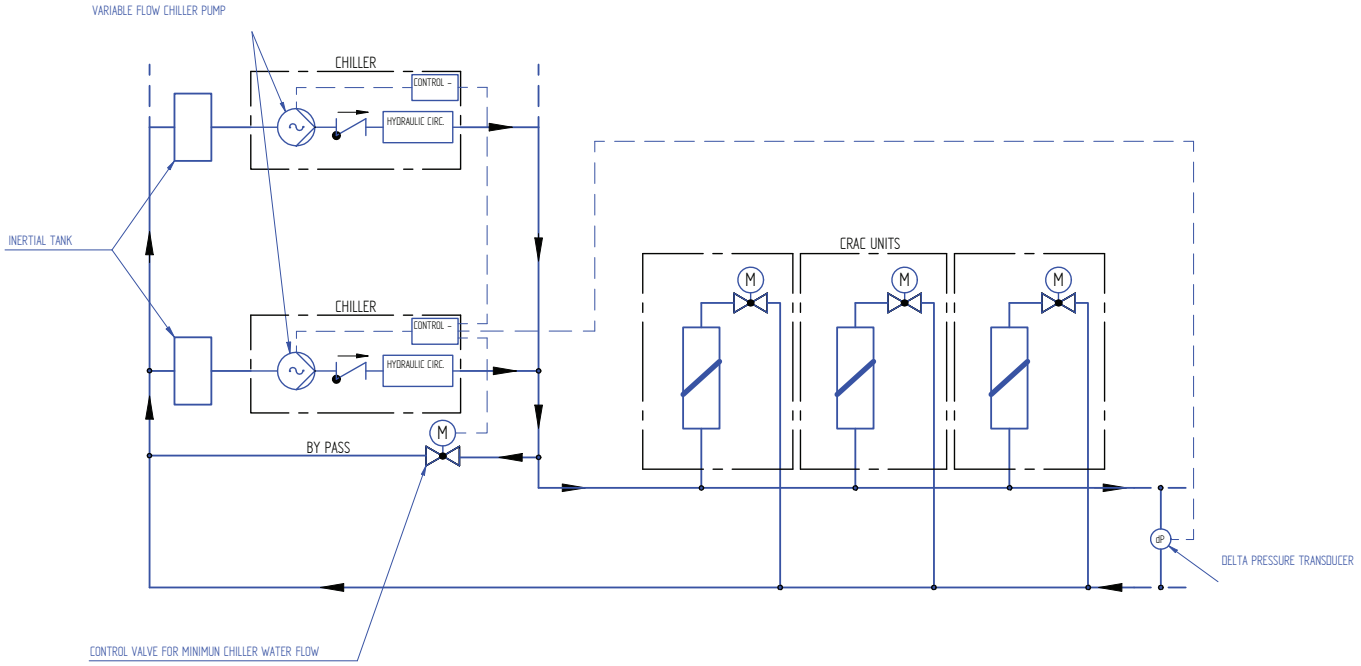
This hydronic design requires:

- a constant-speed pump (and check valve) for each chiller;
- two-way control valves embedded in each CRAC unit to regulate the amount of chilled water that flows through the cooling coils;
- a variable-flow secondary circuit distribution pump to serve the CRAC units coils (usually managed by a drive that read and keep constant DP through CRAC units);
- a bypass to hydraulically decouple the primary (production) and secondary (distribution) sides of the system able to manage the water flow of the largest chiller (primary) pump
- for multi-chiller systems, a BMS or a Chiller Sequencer Controller able to maintain Primary Flow higher than the secondary one

Each CRAC unit adjusts the flow of chilled water to satisfy the data center's cooling demand, consequently the secondary circuit distribution pump responds by regulating the amount of chilled water delivered. Specifically, the secondary flow rate is produced to maintain the necessary system pressure differential. As the primary loop's water flow cannot deliver a step-less modulation, water flows through the bypass to balance the system. Primary flow must always meet or exceed the secondary flow. Any excess primary water flows through the decoupler to the return side and back to the chillers. Any time the primary flow is less than the secondary flow, warm return water will flow "backwards" through the decoupler and mix with the primary flow going out to the Data Center. This condition (known as Low DT Syndrome) has to be avoided because the chiller load control is based on return temperature of the primary circuit. It means that DT on secondary circuit has to be always higher than DT on primary or water flow on primary circuit has to be always higher than flow on secondary one.

Figure 8.2

VARIABLE FLOW ON PRIMARY



The VPF system in *fig. 8.2*, varies water flow throughout the entire system through each operating chiller as well as through the CRAC units. The variable flow logic can be implemented also with different hydraulic configurations, with similar logic (for example with variable flow primary pumps external to the chillers, which can be either one pump in series to each chiller, or connected in a single manifold and put in series with the chillers' system).

This hydronic design requires:

- two-way control valves for each CRAC unit, to regulate the amount of chilled water that flows through the cooling coils;
- Variable-flow chiller pumps, to eliminate the need for a separate secondary distribution pump.
- A pressure transducer, able read and keep a constant Delta Pressure through the CRAC units, by managing the speed of the primary pumps
- A bypass positioned upstream the CRAC units, able to manage the minimum water flow admitted by the primary loop (which corresponds to the minimum load admitted by the single chiller)

- A control valve in the bypass which ensures that the amount of flow that returns to the operating chiller(s) never falls below the minimum limit
- Inertial tank at each chiller water inlet in order to ensure the requested thermal inertia for a proper chiller capacity regulation (the chiller load control is based on return temperature of water loop)

The VPF system is designed to maintain a constant DT through the entire water loop (CRAC and Chiller); the variation of the thermal load is done from the change of flow until where it is possible corresponds to a variation of flow on all the circuit, until the minimum flow admitted by the primary loop is reached. For lower flows, the primary loop remains at the minimum flow, while the excess flow is bypassed in the bypass pipe.

On VPF system in *Figure 8.2* there are several cost-saving benefits not only directly related to the pumps.

The most obvious cost savings comes from energy saving at part load where the inverter pumps allow reducing their power consumption more than proportionally to the flow reduction; in addition eliminating the secondary distribution pump and having a single set of pumps enables simplification on design that ensures substantial savings in initial investment costs.

With the same thermal load required, the VPF system (operating within the working limits indicated below), increases operation efficiency of both the traditional chiller (better evaporator efficiency) but especially of free cooling units, increasing significantly the FC utilization factor during the year, thanks to the higher freecooling inlet fluid temperature at partial load, if compared to a fixed primary flow system.

On the other hand, VPF requires more robust (complex and properly calibrated) control system with coordinated control of chillers, pumps and isolation valves (if present). Of course this implies potentially longer commissioning times to tune the system and experienced facility managers to operate/maintain properly.

Variable Primary Flow with Liebert® AFC

Variable water flow involves changing the water flow through the chiller as the load changes with direct ratio. **Liebert® AFC** units with variable flow option are designed for this duty provided that the water flow variations are within defined limits: minimum flow, maximum flow and maximum flow variation speed.

The recommended maximum change in water flow is 10 percent of the nominal flow per minute. This specified limit is valid if there is the recommended inertial water volume at the hydraulic chiller inlet connection. Overcoming this limit could affect EEV control and compressors reliability.

Flow rates below the minimum values can result in laminar flow through the exchangers causing freeze-up problems, scaling, efficiency drop down and poor control. Flow rates above the maximum values will result in unacceptable pressure drops and can cause excessive erosion, potentially leading to failure.

In the evaluation of the minimum flow rate associated with each model must be evaluated carefully the required accuracy on the chiller's leaving water temperature (LWT)

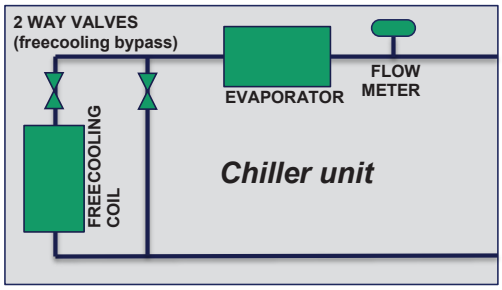
Unit controller manages the minimum and maximum limits of flow rate as well as its fluctuations; if the unit is working next to indicated limits, warning and then alarm are generated with a different strategy according the presence of inverter pump installed on the unit or not.

Tab. 8.1 - Minimum and Maximum flow limits for each model

Model/Version	Min fluid flow [m^3/h]	Max fluid flow [m^3/h]
*H4/*H3 065 SG0	50	150
*H4/*H3 075 SG0	50	150
*H4/*H3 080 SG0	60	185
*H4/*H3 090 SG0	60	185
*H4/*H3 100 SG0	70	190
*H4/*H3 110 SG0	75	220
*H4/*H3 125 SG0	75	220
*H4/*H3 140 SG0	95	300
*IZ 065 SG0	50	150
*IZ 075 SG0	50	150
*IZ 080 SG0	60	185
*IZ 085 SG0	60	185
*IZ 095 SG0	70	190
*IZ 110 SG0	75	220
*IZ 125 SG0	75	230
*H4/*H3 065 HG0	38	100
*H4/*H3 075 HG0	38	100
*H4/*H3 080 HG0	45	110
*H4/*H3 090 HG0	50	120
*H4/*H3 100 HG0	50	130
*H4/*H3 110 HG0	55	155
*H4/*H3 125 HG0	60	180
*H4/*H3 140 HG0	65	180
*H4/*H3 165 HG0	80	220
*H4/*H3 180 HG0	85	260
*H4/*H3 195 HG0	90	320
*IZ 065 HG0	38	100
*IZ 075 HG0	38	100
*IZ 080 HG0	45	110
*IZ 085 HG0	45	110
*IZ 095 HG0	50	130
*IZ 110 HG0	50	150
*IZ 125 HG0	60	180
*IZ 140 HG0	65	220
*IZ 150 HG0	70	220

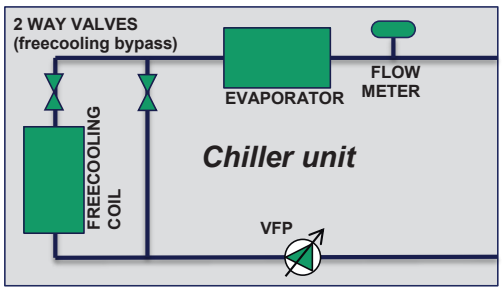
VPF solutions available for Liebert AFC

Three types of variable primary flow logics are available on **Liebert® AFC**:



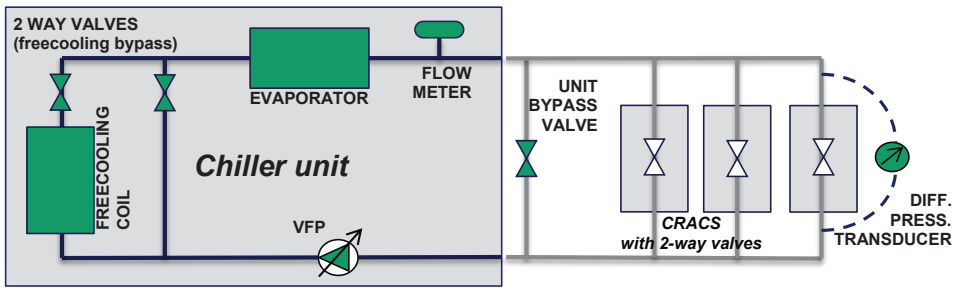
VPF Solution A (digit 12 = 7):

- Unit without pump
- Embedded flow-meter reads the incoming variable flow
- The unit regulation logic automatically adapts to the flow conditions
- Unit limits (max / min flow, max variation speed) → if limits are exceeded, **Liebert® AFC** delivers a warning and consequently an alarm



VPF Solution B (digit 12 = 5 or 6):

- Unit with inverter pump (also available with second backup pump)
- **Liebert® AFC** regulates the primary flow on the base of an external request (BMS) with signal 4-20 mA or 0-10 V
- The unit regulation logic automatically adapts to the flow conditions
- Unit limits (max / min flow, max variation speed) automatically ensured



VPF Solution C (digit 12 = 5 or 6 and additional accessory kit for Delta Pressure (DP) control):

- **Liebert® AFC** with inverter pump (also available with second backup pump)
- The unit regulates the primary flow to maintain a DP in the circuit
- The solution package includes the following items to be installed on site:
  - Embedded differential pressure transducer
  - Embedded bypass valve for operation at loads near to zero

Solution A (selectable with digit 12 = 7): unit without pump, predisposed for operation with variable primary flow.
The variable flow regulation is passive: the chiller doesn't include the primary pump. The chiller adapts its thermal regulation logic to the incoming variable water flow (provided by external pump) within the application limits indicated in the previous paragraph. This solution is recommended where external inverter pump are provided by customer; in this case it's necessary to take care about flow limits and fluctuation in order to let the unit works without warning / alarms; this solution could be applied to VPF system as well a primary / secondary water loop hydronic system where there's a variable flow on primary too.
For a multi-chiller application it's necessary a motorized gate valve at chiller's water inlet connection and a chiller sequencer or BMS able to manage both gate valve and chiller sequence / rotation.
It does not require any electrical connection.

Solution B (selectable with digit 12 = 5 or 6): unit with pump (or double pump), variable primary flow guided by external request (BMS).
The variable flow regulation is passive: the chiller regulates the primary flow on the base of an external request which must be provided with a signal 4-20 mA or 0-10 V, within the application limits indicated in the previous paragraph. This solution is recommended where external inverter pump are managed but not provided by customer; In this case BMS has to take care about flow limits and fluctuation in similar way as for solution A, but with the additional benefit that the control of **Liebert® AFC** provides a higher level of safety, as it is capable of filtering the external BMS request in order to avoid flow warning or alarms. This solution could be applied to VPF system as well a primary / secondary water loop hydronic system where there's a variable flow on primary too. Anyway on both cases it's necessary to have a BMS system able to read the hydronic

plant flow conditions and managing properly the variable flow pump installed in the unit.
For a multi-chiller application for sure it's not necessary to foresee a motorized gate valve for each chiller, because each **Liebert® AFC** with this option is provided by a check valve on pump delivery; anyway the BMS have to manage not only the flow as above indicated but also chiller sequence / rotation.
See electrical diagram included with the chiller.
Connect Electrically the BMS signal to Device A10 (configurable optoisolator see the component's datasheet included on the documentation) using the terminal blocks :
- XA2: 1110 + 20V DC
- XA2: 1111 + 0VDC
- XA2: 1112 Signal.

Solution C (selectable with digit 12 = 5 or 6 and additional accessory kit for delta pressure control): unit with pump (or double pump), variable primary flow guided by Liebert AFC based on circuit delta pressure. As standard, this solution is available for single chiller systems only.
The variable primary flow is active and guided by **Liebert® AFC**, in order to maintain a set of delta pressure on the CRAC units. It is very important to follow the installation indications for the unit's by pass valve (next to the chiller with the shortest by-pass pipe size according to the DN valve) and differential pressure transducer on the farthest pipe of the plant as indicated on above sketch. These components are supplied loose as a kit and their hydraulic connection and electrical wiring to **Liebert® AFC** has to be done locally.
The hydraulic balancing valve must be positioned downstream of tank, chiller and two way the by-pass valves. The bypass valve (managed by unit control) ensures that the amount of the flow that returns to the operating chiller never falls below the minimum limit.
The following table shows the correct match between each model and the associated kits showing min flow and valve/motor general characteristics.

Kit p/n	Min flow with 30% e.g. [mc/h]	Kv	By pass 2 way valve	DN valve	Motor valve	Press. Transducer
455545	30 to 50	63	VVF32.65-63	DN65	SKB62	TYPE 692 0-160 Kpa
455546	51 to 80	100	VVF32.80-100	DN80	SKB62	TYPE 692 0-160 Kpa
455547	81 to 160	160	VVF32.100-160	DN100	SKC62	TYPE 692 0-160 Kpa

Note: *IP54 motor with spring return, heating element*

The delta pressure set-point on the CRAC units is configurable (between min 60 kPa → limit on valve selection and max 160 kPa → limit on pressure transducer reading)

Usually DP set is bigger or equal to CRAC unit pressure drop at full load for having the design water flow at full load through the entire hydraulic loop and a single CRAC unit itself .

Liebert® AFC will manage the pump speed in order to keep a constant DP on their water loop. When the waterflow requested by the CRAC unit is lower than the minimum water flow admitted by the chiller, the two way bypass valve starts to open in order to keep the min flow through the chiller and in the same time maintaining the DP requested on CRAC water loop.

To ensure a stable system and avoid fluctuations, it is preferable to have a carefully balanced hydraulic system on the CRAC units side. For this reason, 2 way pressure independent valves (PRIV) on CRAC units are recommended.

See electrical diagram included with the chiller.

Connect Electrically the differential pressure transducer (DP water) to Device A10 (configurable optoisolator) using the terminal blocks :

- XA2: 1110 + 20V DC

- XA2: 1111 + 0VDC

- XA2: 1112 Signal.

Electrically connect the Bypass valve of the machine (Ybypass - see its data sheet included in the documentation attached to the machine) to the A12 equipment (configurable optocoupler - see its data sheet included in the documentation attached to the machine) install A10 equipment using the terminal block:

- XC: 1115 GND signal

- XC: 1116 signal + 0VDC

- XC: 1117 0V AC supply

- XC: 1118 +24V AC supply

Set the unit bypass valve (Y bypass) as described on the electrical diagram

Install and connect Electrically the heating unit bypass valve (Y bypass Heating see the component's datasheet included on the documentation) using the terminal blocks :

- XC: 1117 0V AC supply

- XC: 1118 +24V AC supply

Recommendation for multiple chiller VPS applications

The system shall be managed in accordance with the principle of the diagram shown in *fig. 8.2*.

To ensure a stable system and avoid fluctuations, it is recommended to balance carefully the hydraulic system and to use 2-way pressure independent valves (PRIV) on CRAC units.

The minimum flow rate must be ensured on the **Liebert® AFC** units when they are **ON**, by regulating properly the variable pumps flow and the bypass valve.

When the pumps are installed outside the chillers (connected in a single manifold and put in series with the chillers' system) and gates valves are installed on each chiller hydraulic connection, for the flow-based sequencing, it is recommended to have slightly oversized pumps compared to the nominal flow of chillers, in order to have the single pump at indicatively 80% of the speed when providing the nominal flow required by the chiller. In any case during unit sequencing, it's recommended to avoid overcoming the indicated max flow variation speed on each chiller (max 10%/min.) and ensure that the compressors are not enabled while the minimum flow limits are reached.

When the pumps are installed inside each chiller but managed by BMS (solution B of the previous paragraph), together with chiller staging, before starting one more chiller it's necessary to anticipate flow reduction on running chiller while accelerating flow in the incoming one till all the inverter pump system reach the same speed (during this phase, if the control of **Liebert® AFC** recognizes a variation speed higher than 10% min it will keep the compressors **OFF** until a stable flow is reached, and then start the compressors, if the load requires); the same control with opposite logic shall be foreseen when one chiller is stopped.

9 Sound Levels

The tables show the noise data for different fans configurations, with the unit operating continuously at full load at the following conditions:

Evaporator Fluid temperatures		Air temperature
Inlet	Outlet	
26° or 29°C	20°C	35°C

Note 1 *The value of **PWL** (Sound Power Level) is calculated in according to ISO 3744 procedure method.*
Sound Power Level tolerance for each octave band: -0 / +2 dB

Note 2 *The value of **SPL** (Sound Pressure Level) for every octave band frequency is measured in free field conditions and at 1 meter from the unit according to ISO 3744 average method.*
Sound Pressure Level tolerance for each octave band: -0 / +2 dB

Note 3 *The installation of the unit in a high-reverberating environment will adversely affect the declared **SPL** values.*

Note 4 *Avoid positioning in areas with possible reverberation of the sound waves which can adversely effect the noise levels.*

- **SPL** Measured according ISO 3744 methods: **PWL** calculated according ISO 3744

Standard Version

Table 9.1 – Sound Pressure Levels (SPL) - *H4/*H3 with Base EC Fans φ910 @1100rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*H4/ *H3	"SPL" Sound pressure level @1m [dB]								
065	82	85	82	84	78	75	67	60	**84,3**
075	82	85	82	84	78	75	67	60	**84,4**
080	83	86	83	85	79	76	68	61	**84,7**
090	83	86	83	85	79	76	68	61	**84,8**
100	83	86	83	85	79	76	68	61	**85,0**
110	83	86	83	85	79	76	68	61	**85,1**
125	83	86	83	85	79	76	68	61	**85,3**
140	83	86	83	85	79	76	68	61	**85,4**
165	84	87	84	86	80	77	69	62	**85,7**
180	84	87	84	86	80	77	69	62	**85,9**
195	84	87	84	86	80	77	69	62	**86,0**

Table 9.2 – Sound Power Levels (PWL) - *H4/H3 with Base EC Fans φ910 @1100rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*H4/ *H3	"PWL" Sound power level [dB]								
065	104	107	104	106	100	97	89	82	**105,8**
075	104	107	104	106	100	97	89	82	**105,9**
080	104	107	104	106	100	97	89	82	**106,6**
090	105	108	105	107	101	98	90	83	**106,7**
100	105	108	105	107	101	98	90	83	**107,4**
110	105	108	105	107	101	98	90	83	**107,4**
125	106	109	106	108	102	99	91	84	**108,0**
140	106	109	106	108	102	99	91	84	**108,1**
165	107	110	107	109	103	100	92	85	**108,7**
180	107	110	107	109	103	100	92	85	**109,2**
195	107	110	107	109	103	100	92	85	**109,3**

Table 9.3 – Sound Pressure Levels (SPL) - *H4/*H3 with Premium EC Fans φ910 @980rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*H4/ *H3	"SPL" Sound pressure level @1m [dB]								
065	77	80	77	79	73	70	62	55	78,7
075	77	80	77	79	73	70	62	55	78,8
080	77	80	77	79	73	70	62	55	79,1
090	77	80	77	79	73	70	62	55	79,3
100	77	80	77	79	73	70	62	55	79,5
110	77	80	77	79	73	70	62	55	79,6
125	78	81	78	80	74	71	63	56	79,9
140	78	81	78	80	74	71	63	56	80,1
165	78	81	78	80	74	71	63	56	80,2
180	78	81	78	80	74	71	63	56	80,6
195	79	82	79	81	75	72	64	57	80,8

Table 9.4 – Sound Power Levels (PWL) - *H4/H3 with Premium EC Fans φ910 @980rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*H4/ *H3	"PWL" Sound power level [dB]								
065	98	101	98	100	94	91	83	76	100,2
075	98	101	98	100	94	91	83	76	100,3
080	99	102	99	101	95	92	84	77	101,1
090	99	102	99	101	95	92	84	77	101,3
100	100	103	100	102	96	93	85	78	101,9
110	100	103	100	102	96	93	85	78	102,0
125	101	104	101	103	97	94	86	79	102,7
140	101	104	101	103	97	94	86	79	102,9
165	101	104	101	103	97	94	86	79	103,3
180	102	105	102	104	98	95	87	80	104,0
195	102	105	102	104	98	95	87	80	104,2

Table 9.5 – Sound Pressure Levels (SPL) - *H4/*H3 Low noise version φ800 fans @850rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*H4/ *H3	"SPL" Sound pressure level @1m [dB]								
065	72	73	72	73	66	60	53	48	**72,3**
075	72	73	73	73	66	60	53	48	**73,0**
080	73	74	73	74	67	61	54	49	**73,2**
090	73	74	74	74	67	61	54	49	**74,0**
100	74	75	74	75	68	62	55	50	**74,1**
110	74	75	74	75	68	62	55	50	**74,4**
125	74	75	75	75	68	62	55	50	**75,0**
140	75	76	76	76	69	63	56	51	**75,9**
165	76	77	76	77	70	64	57	52	**76,4**
180	77	78	77	78	71	65	58	53	**77,1**
195	77	78	78	78	71	65	58	53	**77,7**

Table 9.6 – Sound Power Levels (PWL) - *H4/H3 Low noise version φ800 fans @850rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*H4/ *H3	"PWL" Sound power level [dB]								
065	93	94	94	94	87	81	74	69	**93,8**
075	94	95	94	95	88	82	75	70	**94,5**
080	95	96	95	96	89	83	76	71	**95,2**
090	95	96	96	96	89	83	76	71	**96,0**
100	96	97	96	97	90	84	77	72	**96,4**
110	96	97	97	97	90	84	77	72	**96,8**
125	97	98	98	98	91	85	78	73	**97,7**
140	98	99	99	99	92	86	79	74	**98,6**
165	99	100	99	100	93	87	80	75	**99,5**
180	100	101	100	101	94	88	81	76	**100,5**
195	101	102	101	102	95	89	82	77	**101,1**

Table 9.7 – Sound Pressure Levels (SPL) - *H4/*H3 Quiet version φ800 fans @700rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*H4/ *H3	"SPL" Sound pressure level @1m [dB]								
065	67	68	68	68	61	55	48	43	68,0
075	68	69	69	69	62	56	49	44	68,9
080	69	70	69	70	63	57	50	45	69,1
090	69	70	70	70	63	57	50	45	70,0
100	69	70	70	70	63	57	50	45	70,0
110	70	71	70	71	64	58	51	46	70,4
125	70	71	71	71	64	58	51	46	71,0
140	71	72	72	72	65	59	52	47	72,0
165	72	73	73	73	66	60	53	48	72,6
180	73	74	73	74	67	61	54	49	73,4
195	74	75	74	75	68	62	55	50	74,3

Table 9.8 – Sound Power Levels (PWL) - *H4/H3 Quiet version φ800 fans @700rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*H4/ *H3	"PWL" Sound power level [dB]								
065	89	90	89	90	83	77	70	65	89,5
075	90	91	90	91	84	78	71	66	90,4
080	91	92	91	92	85	79	72	67	91,1
090	91	92	92	92	85	79	72	67	92,0
100	92	93	92	93	86	80	73	68	92,4
110	92	93	93	93	86	80	73	68	92,8
125	93	94	94	94	87	81	74	69	93,7
140	94	95	95	95	88	82	75	70	94,7
165	95	96	96	96	89	83	76	71	95,7
180	96	97	97	97	90	84	77	72	96,8
195	97	98	98	98	91	85	78	73	97,7

Table 9.9 – Sound Pressure Levels (SPL) - *IZ with Base EC Fans φ910 @1100rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*IZ	"SPL" Sound pressure level @1m [dB]								
065	84	80	83	83	80	74	69	64	84,4
075	84	80	83	83	81	74	69	64	84,5
080	84	83	83	84	80	75	68	63	84,8
085	84	83	83	84	80	75	68	63	84,8
095	84	83	83	84	80	75	69	63	85,1
110	84	83	83	84	80	75	69	63	85,1
125	84	84	84	84	80	76	69	63	85,3
140	84	84	84	85	81	76	69	63	85,6
150	85	84	84	85	81	76	69	64	85,8

Table 9.10 – Sound Power Levels (PWL) - *IZ with Base EC Fans φ910 @1100rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*IZ	"PWL" Sound power level [dB]								
065	106	102	105	104	102	96	90	86	105,9
075	106	102	105	104	102	96	90	86	106,0
080	104	104	105	106	102	94	89	83	106,7
085	104	105	105	106	102	94	89	83	106,8
095	105	105	105	106	103	95	89	84	107,4
110	105	105	105	106	103	95	89	84	107,4
125	106	106	106	107	103	96	90	85	108,0
140	106	106	107	108	104	96	91	85	108,6
150	107	107	107	108	104	97	91	86	109,1

Table 9.11 – Sound Pressure Levels (SPL) - *IZ with Premium EC Fans φ910 @980rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*IZ	"PWL" Sound power level [dB]								
065	79	75	78	77	75	68	63	59	78,8
075	79	75	78	77	75	69	63	59	79,1
080	78	78	78	78	74	69	63	57	79,2
085	78	78	78	79	74	70	63	57	79,5
095	79	78	78	79	75	70	63	58	79,8
110	78	78	78	79	75	70	63	57	79,6
125	79	78	78	79	75	70	63	58	79,8
140	79	78	78	79	75	70	63	58	79,8
150	79	78	78	79	75	70	64	58	80,1

Table 9.12 – Sound Power Levels (PWL) - *IZ with Premium EC Fans φ910 @980rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*IZ	"PWL" Sound power level [dB]								
065	96	95	97	98	98	88	84	78	100,3
075	97	96	97	98	98	88	84	78	100,6
080	100	100	100	100	96	91	85	79	101,2
085	100	100	100	101	96	92	85	79	101,5
095	101	101	101	101	97	92	86	80	102,2
110	101	100	100	101	97	92	86	80	102,0
125	101	101	101	102	98	93	86	80	102,6
140	102	101	101	102	98	93	86	81	102,9
150	102	102	102	103	98	94	87	81	103,5

Table 9.13 – Sound Pressure Levels (SPL) - *IZ Low noise version φ800 fans @850rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*IZ	"PWL" Sound power level [dB]								
065	69	68	70	71	71	61	57	51	73,3
075	70	70	71	72	72	62	58	52	74,5
080	72	72	72	73	69	62	56	51	74,0
085	73	73	73	74	70	63	57	52	75,1
095	73	73	73	74	71	63	57	52	75,3
110	72	72	73	73	70	62	56	51	74,5
125	75	75	75	76	73	65	59	54	77,3
140	74	74	74	74	70	66	59	53	75,4
150	75	74	74	75	71	66	60	54	76,0

Table9.14 – Sound Power Levels (PWL) - *IZ Low noise version φ800 fans @850rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*IZ	"PWL" Sound power level [dB]								
065	92	93	93	94	90	82	77	71	94,8
075	94	94	94	95	91	84	78	73	96,0
080	94	94	94	95	91	84	78	73	96,0
085	95	95	95	96	92	85	79	74	97,1
095	95	95	96	97	93	85	80	74	97,6
110	95	95	95	96	92	85	79	73	96,9
125	98	98	98	99	95	88	82	77	100,1
140	96	96	97	97	94	86	80	75	98,5
150	97	97	97	98	95	87	81	76	99,4

Table 9.15 – Sound Pressure Levels (SPL) - *IZ Quiet version φ800 fans @700rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*IZ	"PWL" Sound power level [dB]								
065	65	64	66	67	67	57	53	47	69,4
075	67	66	67	68	68	59	54	49	70,8
080	68	68	68	69	66	58	52	47	70,3
085	69	69	70	70	67	59	53	48	71,5
095	69	69	70	70	67	59	53	48	71,5
110	68	68	69	70	66	58	53	47	70,7
125	69	69	69	70	67	59	53	48	71,3
140	70	70	70	71	67	62	55	49	71,6
150	71	71	71	71	67	63	56	50	72,3

Table 9.16 – Sound Power Levels (PWL) - *IZ Quiet version φ800 fans @700rpm

Model	Octave Band Frequency [Hz]								Total [dBA]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
*IZ	"PWL" Sound power level [dB]								
065	89	89	89	90	86	79	73	67	90,9
075	90	90	90	91	88	80	74	69	92,3
080	90	90	90	91	88	80	74	69	92,3
085	91	91	91	92	89	81	75	70	93,4
095	92	92	92	93	89	82	76	70	93,9
110	91	91	91	92	88	81	75	70	93,1
125	92	92	92	93	89	82	76	71	94,0
140	92	92	93	94	90	82	77	71	94,7
150	93	93	94	95	91	83	78	72	95,7

10 Electrical Data

Table 10.1 – Electrical Data - NH4***SG0 Models

Models NH4***SG0		065	075	080	090	100	110	125	140
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz							
Operating (1)									
Total power input (2)	kW	155	189	210	240	256	273	316	357
OA (without PFC) (2)	A	271	321	349	420	438	459	523	592
cosφ (without PFC) (2)	-	0,83	0,85	0,87	0,82	0,84	0,86	0,87	0,87
cosφ (with PFC) (2)	-	0,94	0,94	0,94	0,95	0,94	0,93	0,93	0,94
Rated power									
FLA	A	480	540	577	677	747	807	916	976
Max. power input	kW	238	268	302	334	355	370	426	473
OAmax	A	391	437	491	557	586	601	690	766
cosφ (without PFC)		0,88	0,89	0,89	0,86	0,88	0,89	0,89	0,89
OAmax (with PFC)	A	362	408	463	529	537	562	656	764
cosφ (with PFC)		0,95	0,95	0,94	0,91	0,96	0,95	0,94	0,89
LRA	A	832	908	1005	1066	1093	922	1034	1227
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm² per phase	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x400 mm²
Control									
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz							
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2
Compressors									
Power input	kW	132	157	172	201	211	228	265	306
Nominal current	A	234	272	290	361	369	390	445	514
Single compressor 1 - FLA	A	171	194	217	250	267	267	306	344
Single compressor 1 - FLI	A	216	246	260	310	370	370	420	450
Single compressor 1 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	586 - PW	586 - YD	650 - YD	805 - YD
Single compressor 2 - FLA	A	171	194	217	250	250	267	306	344
Single compressor 2 - FLI	A	216	246	260	310	310	370	420	450
Single compressor 2 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	757 - YD	586 - YD	650 - YD	805 - YD
Fans									
Fans number	-	10	10	12	12	14	14	16	16
Power input (2)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Nominal current (2)	A	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9
Max. Current (2)	A	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,8
Pumps									
Std. head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/151	NB80-160/161	NB80-160/161

Nominal power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5	18,5
Motor power	kW	8,4	12,1	12,1	16,4	16,4	16,4	20,1	20,1
Max. current	A	15,2	19,4	19,4	26,3	26,3	26,3	31,5	31,5
LRA	A	169	136	136	184	184	184	221	221
High head pump model	-	NB65-160/157	NB65-160/173	NB65-160/173	NB65-160/177	NB80-160/161	NB80-160/161	NB80-160/167	NB80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	18,5	22,0	22,0
Motor power	kW	12,1	16,4	16,4	20,0	20,1	20,1	23,4	23,4
Max. current	A	19,4	26,3	26,3	31,5	31,5	31,5	38,0	38,0
LRA	A	136	184	184	221	221	221	274	274
Inverter pump model	-	NBE65-160/157	NBE65-160/173	NBE65-160/173	NBE65-160/177	NBE80-160/161	NBE80-160/161	NBE80-160/167	NBE80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	18,5	22,0	22,0
Motor power	kW	12,4	17,7	17,7	21,4	21,6	21,6	25,2	25,2
Max. current	A	19,3	26,6	26,6	32,3	34,0	34,0	39,9	39,9
No-Glycol pump model	-	NBE65-160/157	NBE65-160/157	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/161	NBE80-160/161
Nominal power	kW	11,0	11,0	15,0	15,0	15,0	15,0	18,5	18,5
Motor power	kW	12,4	12,4	17,5	17,5	17,5	17,5	21,6	21,6
Max. current	A	19,3	19,3	28,0	28,0	28,0	28,0	34,0	34,0

(1) At nominal conditions: water inlet/outlet temperatures 26/20°C, outdoor air temperature 35°C
(2) Base EC fans versions
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

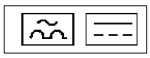


Table 10.2 – Electrical Data - NH4*SG0 Low Noise Models**

Models NH4***SG0L		065	075	080	090	100	110	125	140
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz							
Operating (1)									
Total power input	kW	153	180	199	232	243	262	303	353
OA (without PFC)	A	265	308	331	407	418	442	504	585
cosφ (without PFC)	-	0,83	0,84	0,87	0,82	0,84	0,86	0,87	0,87
cosφ (with PFC)	-	0,95	0,94	0,94	0,95	0,94	0,93	0,93	0,95
Rated power									
FLA	A	484	544	582	682	753	813	923	983
Max. power input	kW	240	270	305	336	358	373	429	476
OAmax	A	394	440	496	562	590	607	695	771
cosφ (without PFC)		0,88	0,88	0,89	0,86	0,88	0,89	0,89	0,89
OAmax (with PFC)	A	366	412	468	535	542	568	663	771
cosφ (with PFC)		0,95	0,94	0,94	0,91	0,95	0,95	0,94	0,89
LRA	A	832	908	1008	1069	1097	926	1039	1232
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm² per phase	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x400 mm²
Control									
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz							
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7

Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2
Compressors									
Power input	kW	141	168	184	217	226	246	284	334
Nominal current	A	246	289	308	384	391	415	474	555
Single compressor 1 - FLA	A	171	194	217	250	267	267	306	344
Single compressor 1 - FLI	A	216	246	260	310	370	370	420	450
Single compressor 1 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	586 - PW	586 - YD	650 - YD	805 - YD
Single compressor 2 - FLA	A	171	194	217	250	250	267	306	344
Single compressor 2 - FLI	A	216	246	260	310	310	370	420	450
Single compressor 2 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	757 - YD	586 - YD	650 - YD	805 - YD
Fans									
Fans number	-	10	10	12	12	14	14	16	16
Power input	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Nominal current	A	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9
Max. Current	A	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
Pumps									
Std. head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/151	NB80-160/161	NB80-160/161
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5	18,5
Motor power	kW	8,4	12,1	12,1	16,4	16,4	16,4	20,1	20,1
Max. current	A	15,2	19,4	19,4	26,3	26,3	26,3	31,5	31,5
LRA	A	169	136	136	184	184	184	221	221
High head pump model	-	NB65-160/157	NB65-160/173	NB65-160/173	NB65-160/177	NB80-160/161	NB80-160/161	NB80-160/167	NB80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	18,5	22,0	22,0
Motor power	kW	12,1	16,4	16,4	20,0	20,1	20,1	23,4	23,4
Max. current	A	19,4	26,3	26,3	31,5	31,5	31,5	38,0	38,0
LRA	A	136	184	184	221	221	221	274	274
Inverter pump model	-	NBE65-160/157	NBE65-160/173	NBE65-160/173	NBE65-160/177	NBE80-160/161	NBE80-160/161	NBE80-160/167	NBE80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	18,5	22,0	22,0
Motor power	kW	12,4	17,7	17,7	21,4	21,6	21,6	25,2	25,2
Max. current	A	19,3	26,6	26,6	32,3	34,0	34,0	39,9	39,9
No-Glycol pump model	-	NBE65-160/157	NBE65-160/157	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/161	NBE80-160/161
Nominal power	kW	11,0	11,0	15,0	15,0	15,0	15,0	18,5	18,5
Motor power	kW	12,4	12,4	17,5	17,5	17,5	17,5	21,6	21,6
Max. current	A	19,3	19,3	28,0	28,0	28,0	28,0	34,0	34,0

(1) At nominal conditions: water inlet/outlet temperatures 26/20°C, outdoor air temperature 35°C
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

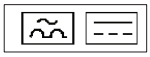


Table 10.3 – Electrical Data - CH4***SG0 Models

Models CH4***SG0		065	075	080	090	100	110	125	140
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz							
Operating (1)									
Total power input (2)	kW	160	182	204	232	248	264	306	344
OA (without PFC) (2)	A	276	312	339	408	426	445	509	574
cosφ (without PFC) (2)	-	0,83	0,84	0,87	0,82	0,84	0,86	0,87	0,87
cosφ (with PFC) (2)	-	0,94	0,94	0,94	0,95	0,94	0,93	0,93	0,95
Rated power									
FLA	A	480	540	577	677	747	807	916	976
Max. power input	kW	238	268	302	334	355	370	426	473
OAmax	A	389	435	491	557	584	601	688	764
cosφ (without PFC)		0,88	0,89	0,89	0,86	0,88	0,89	0,89	0,89
OAmax (with PFC)	A	362	408	463	529	537	562	656	764
cosφ (with PFC)		0,95	0,95	0,94	0,91	0,96	0,95	0,94	0,89
LRA	A	832	908	1005	1066	1093	922	1034	1227
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm² per phase	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x400 mm²
Control									
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz							
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2
Compressors									
Power input	kW	130	152	168	196	206	222	258	296
Nominal current	A	230	266	284	353	362	381	435	500
Single compressor 1 - FLA	A	171	194	217	250	267	267	306	344
Single compressor 1 - FLI	A	216	246	260	310	370	370	420	450
Single compressor 1 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	586 - PW	586 - YD	650 - YD	805 - YD
Single compressor 2 - FLA	A	171	194	217	250	250	267	306	344
Single compressor 2 - FLI	A	216	246	260	310	310	370	420	450
Single compressor 2 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	757 - YD	586 - YD	650 - YD	805 - YD
Fans									
Fans number	-	10	10	12	12	14	14	16	16
Power input (2)	kW	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0
Nominal current (2)	A	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6
Max. Current (2)	A	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,8
Pumps									
Std. head pump model	-	NB65-125/127	NB65-125/127	NB65-125/137	NB65-125/144	NB80-160/147	NB80-160/147	NB80-160/151	NB80-160/151
Nominal power	kW	5,5	5,5	7,5	11,0	11,0	11,0	15,0	15,0
Motor power	kW	6,1	6,1	8,4	12,1	12,1	12,1	16,4	16,4
Max. current	A	11,2	11,2	15,2	19,4	19,4	19,4	26,3	26,3
LRA	A	131	131	169	136	136	136	184	184

High head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/151	NB80-160/161	NB80-160/161
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5	18,5
Motor power	kW	8,4	12,1	12,1	16,4	16,4	16,4	20,1	20,1
Max. current	A	15,2	19,4	19,4	26,3	26,3	26,3	31,5	31,5
LRA	A	169	136	136	184	184	184	221	221
Inverter pump model	-	NBE65-125/137	NBE65-125/144	NBE65-125/144	NBE65-160/173	NBE80-160/151	NBE80-160/151	NBE80-160/161	NBE80-160/161
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5	18,5
Motor power	kW	8,6	12,4	12,4	17,7	17,5	17,5	21,6	21,6
Max. current	A	13,4	19,3	19,3	26,6	28,0	28,0	0,0	34,0

(1) At nominal conditions: 30%eth.glycol inlet/outet temperatures 26/20°C, outdoor air temperature 35°C
(2) Base EC fans versions
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

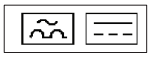


Table 10.4 – Electrical Data - CH4*SG0 Low Noise Models**

Models CH4***SG0L		065	075	080	090	100	110	125	140
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz							
Operating (1)									
Total power input	kW	148	174	192	223	234	253	293	339
OA (without PFC)	A	258	298	320	393	405	427	487	563
cosφ (without PFC)	-	0,83	0,84	0,86	0,82	0,84	0,86	0,87	0,87
cosφ (with PFC)	-	0,94	0,94	0,94	0,95	0,94	0,93	0,93	0,95
Rated power									
FLA	A	484	544	582	682	753	813	923	983
Max. power input	kW	240	270	305	336	358	373	429	476
OAmax	A	394	440	496	562	590	607	695	771
cosφ (without PFC)		0,88	0,88	0,89	0,86	0,88	0,89	0,89	0,89
OAmax (with PFC)	A	366	412	468	535	542	568	663	771
cosφ (with PFC)		0,95	0,94	0,94	0,91	0,95	0,95	0,94	0,89
LRA	A	832	908	1008	1069	1097	926	1039	1232
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm² per phase	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x400 mm²
Control									
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz							
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2
Compressors									
Power input	kW	137	163	179	210	219	238	275	321
Nominal current	A	241	281	300	373	381	403	460	536
Single compressor 1 - FLA	A	171	194	217	250	267	267	306	344
Single compressor 1 - FLI	A	216	246	260	310	370	370	420	450
Single compressor 1 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	586 - PW	586 - YD	650 - YD	805 - YD
Single compressor 2 - FLA	A	171	194	217	250	250	267	306	344
Single compressor 2 - FLI	A	216	246	260	310	310	370	420	450
Single compressor 2 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	757 - YD	586 - YD	650 - YD	805 - YD
Fans									
Fans number	-	10	10	12	12	14	14	16	16
Power input	kW	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1
Nominal current	A	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Max. Current	A	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2

Pumps									
Std. head pump model	-	NB65-125/127	NB65-125/127	NB65-125/137	NB65-125/144	NB80-160/147	NB80-160/147	NB80-160/151	NB80-160/151
Nominal power	kW	5,5	5,5	7,5	11,0	11,0	11,0	15,0	15,0
Motor power	kW	6,1	6,1	8,4	12,1	12,1	12,1	16,4	16,4
Max. current	A	11,2	11,2	15,2	19,4	19,4	19,4	26,3	26,3
LRA	A	131	131	169	136	136	136	184	184
High head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/151	NB80-160/161	NB80-160/161
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5	18,5
Motor power	kW	8,4	12,1	12,1	16,4	16,4	16,4	20,1	20,1
Max. current	A	15,2	19,4	19,4	26,3	26,3	26,3	31,5	31,5
LRA	A	169	136	136	184	184	184	221	221
Inverter pump model	-	NBE65-125/137	NBE65-125/144	NBE65-125/144	NBE65-160/173	NBE80-160/151	NBE80-160/151	NBE80-160/161	NBE80-160/161
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5	18,5
Motor power	kW	8,6	12,4	12,4	17,7	17,5	17,5	21,6	21,6
Max. current	A	13,4	19,3	19,3	26,6	28,0	28,0	34,0	34,0

(1) At nominal conditions: water inlet/outlet temperatures 26/20°C, outdoor air temperature 35°C
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

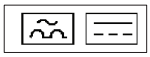


Table 10.5 – Electrical Data - FH4*SG0 Models**

Models FH4***SG0		065	075	080	090	100	110	125	140
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz							
Operating (1)									
Total power input (2)	kW	163	187	209	238	254	271	314	355
OA (without PFC) (2)	A	281	319	347	417	436	456	520	588
cosφ (without PFC) (2)	-	0,84	0,85	0,87	0,82	0,84	0,86	0,87	0,87
cosφ (with PFC) (2)	-	0,94	0,94	0,94	0,95	0,94	0,93	0,93	0,95
Rated power									
FLA	A	480	540	577	677	747	807	916	976
Max. power input	kW	238	268	302	334	355	370	426	473
OAmax	A	389	435	491	557	584	601	688	764
cosφ (without PFC)		0,88	0,89	0,89	0,86	0,88	0,89	0,89	0,89
OAmax (with PFC)	A	362	408	463	529	537	562	656	764
cosφ (with PFC)		0,95	0,95	0,94	0,91	0,96	0,95	0,94	0,89
LRA	A	832	908	1005	1066	1093	922	1034	1227
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm²per phase	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x400 mm²
Control									
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz							
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2
Compressors									
Power input	kW	131	155	170	199	209	227	263	303
Nominal current	A	232	270	288	358	367	387	442	510
Single compressor 1 - FLA	A	171	194	217	250	267	267	306	344
Single compressor 1 - FLI	A	216	246	260	310	370	370	420	450
Single compressor 1 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	586 - PW	586 - YD	650 - YD	805 - YD
Single compressor 2 - FLA	A	171	194	217	250	250	267	306	344
Single compressor 2 - FLI	A	216	246	260	310	310	370	420	450
Single compressor 2 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	757 - YD	586 - YD	650 - YD	805 - YD

Fans									
Fans number	-	10	10	12	12	14	14	16	16
Power input (2)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Nominal current (2)	A	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9
Max. Current (2)	A	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,8
Pumps									
Std. head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/161	NB80-160/161	NB80-160/167
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	18,5	18,5	22,0
Motor power	kW	8,4	12,1	12,1	16,4	16,4	20,1	20,1	23,4
Max. current	A	15,2	19,4	19,4	26,3	26,3	31,5	31,5	38,0
LRA	A	169	136	136	184	184	221	221	274
High head pump model	-	NB65-160/157	NB65-160/173	NB65-160/173	NB65-160/177	NB80-160/161	NB80-160/167	NB80-160/167	NB80-160/177
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	22,0	22,0	30,0
Motor power	kW	12,1	16,4	16,4	20,0	20,1	23,4	23,4	32,1
Max. current	A	19,4	26,3	26,3	31,5	31,5	38,0	38,0	52,0
LRA	A	136	184	184	221	221	274	274	364
Inverter pump model	-	NBE65-160/157	NBE65-160/173	NBE65-160/173	NBE65-160/177	NBE80-160/161	NBE80-160/167	NBE80-160/167	NBE80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	22,0	22,0	22,0
Motor power	kW	12,4	17,7	17,7	21,4	21,6	25,2	25,2	25,2
Max. current	A	19,3	26,6	26,6	32,3	34,0	39,9	39,9	39,9

(1) At nominal conditions: 30% eth.glycol inlet/outet temperatures 26/20°C, outdoor air temperature 35°C
(2) Base EC fans versions
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

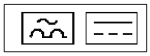


Table 10.6 – Electrical Data - FH4*SG0 Low Noise Models**

Models FH4***SG0L		065	075	080	090	100	110	125	140
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz							
Operating (1)									
Total power input	kW	152	178	197	229	241	260	301	350
OA (without PFC)	A	263	305	328	403	415	438	500	580
cosφ (without PFC)	-	0,83	0,84	0,87	0,82	0,84	0,86	0,87	0,87
cosφ (with PFC)	-	0,94	0,94	0,94	0,95	0,94	0,93	0,93	0,95
Rated power									
FLA	A	484	544	582	682	753	813	923	983
Max. power input	kW	240	270	305	336	358	373	429	476
OAmax	A	394	440	496	562	590	607	695	771
cosφ (without PFC)		0,88	0,88	0,89	0,86	0,88	0,89	0,89	0,89
OAmax (with PFC)	A	366	412	468	535	542	568	663	771
cosφ (with PFC)		0,95	0,94	0,94	0,91	0,95	0,95	0,94	0,89
LRA	A	832	908	1008	1069	1097	926	1039	1232
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm²per phase	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x400 mm²
Control									
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz							
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2
Compressors									
Power input	kW	140	166	182	215	224	243	282	330
Nominal current	A	244	286	305	380	388	411	470	550

Single compressor 1 - FLA	A	171	194	217	250	267	267	306	344
Single compressor 1 - FLI	A	216	246	260	310	370	370	420	450
Single compressor 1 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	586 - PW	586 - YD	650 - YD	805 - YD
Single compressor 2 - FLA	A	171	194	217	250	250	267	306	344
Single compressor 2 - FLI	A	216	246	260	310	310	370	420	450
Single compressor 2 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	757 - YD	586 - YD	650 - YD	805 - YD
Fans									
Fans number	-	10	10	12	12	14	14	16	16
Power input (2)	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Nominal current (2)	A	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9
Max. Current (2)	A	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
Pumps									
Std. head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/161	NB80-160/161	NB80-160/167
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	18,5	18,5	22,0
Motor power	kW	8,4	12,1	12,1	16,4	16,4	20,1	20,1	23,4
Max. current	A	15,2	19,4	19,4	26,3	26,3	31,5	31,5	38,0
LRA	A	169	136	136	184	184	221	221	274
High head pump model	-	NB65-160/157	NB65-160/173	NB65-160/173	NB65-160/177	NB80-160/161	NB80-160/167	NB80-160/167	NB80-160/177
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	22,0	22,0	30,0
Motor power	kW	12,1	16,4	16,4	20,0	20,1	23,4	23,4	32,1
Max. current	A	19,4	26,3	26,3	31,5	31,5	38,0	38,0	52,0
LRA	A	136	184	184	221	221	274	274	364
Inverter pump model	-	NBE65-160/157	NBE65-160/173	NBE65-160/173	NBE65-160/177	NBE80-160/161	NBE80-160/167	NBE80-160/167	NBE80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	22,0	22,0	22,0
Motor power	kW	12,4	17,7	17,7	21,4	21,6	25,2	25,2	25,2
Max. current	A	19,3	26,6	26,6	32,3	34,0	39,9	39,9	39,9

(1) At nominal conditions: 30% eth.glycol inlet/outet temperatures 26/20°C, outdoor air temperature 35°C
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

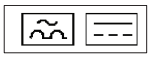


Table 10.7 – Electrical Data - NIZ*SG0 Models**

Models NIZ***SG0		065	075	080	085	095	110	125
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz						
Operating (1)								
Total power input (2)	kW	160	186	192	214	238	280	315
OA (without PFC) (2)	A	259	301	321	352	385	463	516
cosφ (without PFC) (2)	-	0,89	0,89	0,86	0,88	0,89	0,87	0,88
Rated power								
FLI	A	469	539	533	679	719	809	858
Max. power input	kW	265	304	291	347	371	438	465
FLA	A	422	489	474	557	591	704	746
cosφ (without PFC)		0,91	0,90	0,89	0,90	0,90	0,90	0,90
LRA	A	88	88	956	795	834	1028	1101
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x300 mm²
Control								
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz						
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30

LRA	A	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2
Compressors								
Power input	kW	128	154	153	176	193	235	264
Nominal current	A	210	252	262	293	316	394	438
Single compressor 1 - FLA	A	374	440	232	300	300	374	374
Single compressor 1 - FLI	A	420	490	260	340	340	420	420
Single compressor 1 - LRA - Method starting	A	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.
Single compressor 2 - FLA	A			183	198	222	262	295
Single compressor 2 - FLI	A			214	280	310	320	360
Single compressor 2 - LRA - Method starting	A			665 - PW	436 - YD	465 - YD	586 - YD	650 - YD
Fans								
Fans number	-	10	10	12	12	14	14	16
Power input (2)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Nominal current (2)	A	4,9	4,9	4,9	4,9	4,9	4,9	4,9
Max. Current (2)	A	4,8	4,8	4,8	4,8	4,8	4,8	4,8
Pumps								
Std. head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/151	NB80-160/161
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5
Motor power	kW	8,4	12,1	12,1	16,4	16,4	16,4	20,1
Max. current	A	15,2	19,4	19,4	26,3	26,3	26,3	31,5
LRA	A	169	136	136	184	184	184	221
High head pump model	-	NB65-160/157	NB65-160/173	NB65-160/173	NB65-160/177	NB80-160/161	NB80-160/161	NB80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	18,5	22,0
Motor power	kW	12,1	16,4	16,4	20,0	20,1	20,1	23,4
Max. current	A	19,4	26,3	26,3	31,5	31,5	31,5	38,0
LRA	A	136	184	184	221	221	221	274
Inverter pump model	-	NBE65-160/157	NBE65-160/173	NBE65-160/173	NBE65-160/177	NBE80-160/161	NBE80-160/161	NBE80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	18,5	22,0
Motor power	kW	12,4	17,7	17,7	21,4	21,6	21,6	25,2
Max. current	A	19,3	26,6	26,6	32,3	34,0	34,0	39,9
No-Glycol pump model	-	NBE65-160/157	NBE65-160/157	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/161
Nominal power	kW	11,0	11,0	15,0	15,0	15,0	15,0	18,5
Motor power	kW	12,4	12,4	17,5	17,5	17,5	17,5	21,6
Max. current	A	19,3	19,3	28,0	28,0	28,0	28,0	34,0
Max. current	A	19,3	19,3	28,0	28,0	28,0	28,0	34,0

(1) At nominal conditions: 30% eth.glycol inlet/outet temperatures 26/20°C, outdoor air temperature 35°C
(2) Base EC fans versions
(3) PVC cable 40 °C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

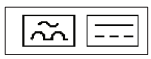


Table 10.8 – Electrical Data - NIZ*SG0 Low Noise Models**

Models NIZ***SG0L		065	075	080	085	095	110	125
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz						
Operating (1)								
Total power input	kW	154	182	181	208	226	277	312
OA (without PFC)	A	249	296	305	343	369	459	510
cosφ (without PFC)	-	0,89	0,89	0,86	0,88	0,89	0,87	0,88
Rated power								
FLI	A	472	542	536	682	723	813	863
Max. power input	kW	267	306	293	350	374	440	468
FLA	A	425	492	477	560	595	708	751

cosφ (without PFC)		0,90	0,90	0,89	0,89	0,90	0,90	0,90
LRA	A	91	91	959	798	838	1032	1106
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x300 mm²
Control								
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz						
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2
Compressors								
Power input	kW	142	170	167	194	210	260	292
Nominal current	A	230	277	282	320	342	432	480
Single compressor 1 - FLA	A	374	440	232	300	300	374	374
Single compressor 1 - FLI	A	420	490	260	340	340	420	420
Single compressor 1 - LRA - Method starting	A	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.
Single compressor 2 - FLA	A			183	198	222	262	295
Single compressor 2 - FLI	A			214	280	310	320	360
Single compressor 2 - LRA - Method starting	A			665 - PW	436 - YD	465 - YD	586 - YD	650 - YD
Fans								
Fans number	-	10	10	12	12	14	14	16
Power input (2)	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Nominal current (2)	A	1,9	1,9	1,9	1,9	1,9	1,9	1,9
Max. Current (2)	A	5,2	5,2	5,2	5,2	5,2	5,2	5,2
Pumps								
Std. head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/151	NB80-160/161
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5
Motor power	kW	8,4	12,1	12,1	16,4	16,4	16,4	20,1
Max. current	A	15,2	19,4	19,4	26,3	26,3	26,3	31,5
LRA	A	169	136	136	184	184	184	221
High head pump model	-	NB65-160/157	NB65-160/173	NB65-160/173	NB65-160/177	NB80-160/161	NB80-160/161	NB80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	18,5	22,0
Motor power	kW	12,1	16,4	16,4	20,0	20,1	20,1	23,4
Max. current	A	19,4	26,3	26,3	31,5	31,5	31,5	38,0
LRA	A	136	184	184	221	221	221	274
Inverter pump model	-	NBE65-160/157	NBE65-160/173	NBE65-160/173	NBE65-160/177	NBE80-160/161	NBE80-160/161	NBE80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	18,5	22,0
Motor power	kW	12,4	17,7	17,7	21,4	21,6	21,6	25,2
Max. current	A	19,3	26,6	26,6	32,3	34,0	34,0	39,9
No-Glycol pump model	-	NBE65-160/157	NBE65-160/157	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/161
Nominal power	kW	11,0	11,0	15,0	15,0	15,0	15,0	18,5
Motor power	kW	12,4	12,4	17,5	17,5	17,5	17,5	21,6
Max. current	A	19,3	19,3	28,0	28,0	28,0	28,0	34,0
Max. current	A	19,3	19,3	28,0	28,0	28,0	28,0	34,0

(1) At nominal conditions: 30% eth.glycol inlet/outet temperatures 26/20°C, outdoor air temperature 35°C
(3) PVC cable 40 °C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

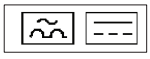


Table 10.9 – Electrical Data - CIZ***SG0 Models

Models CIZ***SG0		065	075	080	085	095	110	125
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz						
Operating (1)								
Total power input (2)	kW	155	180	185	206	230	269	303
OA (without PFC) (2)	A	250	291	310	340	372	447	500
cosφ (without PFC) (2)	-	0,89	0,89	0,86	0,87	0,89	0,87	0,88
Rated power								
FLI	A	469	539	533	679	719	809	858
Max. power input	kW	265	304	291	347	371	438	465
FLA	A	422	489	474	557	591	704	746
cosφ (without PFC)		0,91	0,90	0,89	0,90	0,90	0,90	0,90
LRA	A	69	69	956	795	834	1028	1101
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x300 mm²
Control								
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz						
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2
Compressors								
Power input	kW	125	150	149	170	188	227	255
Nominal current	A	204	245	255	285	308	383	426
Single compressor 1 - FLA	A	374	440	232	300	300	374	374
Single compressor 1 - FLI	A	420	490	260	340	340	420	420
Single compressor 1 - LRA - Method starting	A	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.
Single compressor 2 - FLA	A			183	198	222	262	295
Single compressor 2 - FLI	A			214	280	310	320	360
Single compressor 2 - LRA - Method starting	A			665 - PW	436 - YD	465 - YD	586 - YD	650 - YD
Fans								
Fans number	-	10	10	12	12	14	14	16
Power input (2)	kW	3,0	3,0	3,0	3,0	3,0	3,0	3,0
Nominal current (2)	A	4,6	4,6	4,6	4,6	4,6	4,6	4,6
Max. Current (2)	A	4,8	4,8	4,8	4,8	4,8	4,8	4,8
Pumps								
Std. head pump model	-	NB65-125/127	NB65-125/127	NB65-125/137	NB65-125/144	NB80-160/147	NB80-160/147	NB80-160/151
Nominal power	kW	5,5	5,5	7,5	11,0	11,0	11,0	15,0
Motor power	kW	6,1	6,1	8,4	12,1	12,1	12,1	16,4
Max. current	A	11,2	11,2	15,2	19,4	19,4	19,4	26,3
LRA	A	131	131	169	136	136	136	184
High head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/151	NB80-160/161
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5
Motor power	kW	8,4	12,1	12,1	16,4	16,4	16,4	20,1
Max. current	A	15,2	19,4	19,4	26,3	26,3	26,3	31,5
LRA	A	169	136	136	184	184	184	221
Inverter pump model	-	NBE65-125/137	NBE65-125/144	NBE65-125/144	NBE65-160/173	NBE80-160/151	NBE80-160/151	NBE80-160/161
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5
Motor power	kW	8,6	12,4	12,4	17,7	17,5	17,5	21,6
Max. current	A	13,4	19,3	19,3	26,6	28,0	28,0	34,0

(1) At nominal conditions: 30% eth.glycol inlet/outet temperatures 26/20°C, outdoor air temperature 35°C
(2) Base EC fans versions

(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

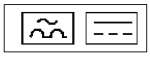


Table 10.10 – Electrical Data - CIZ*SG0 Low Noise Models**

Models CIZ***SG0L		065	075	080	085	095	110	125
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz						
Operating (1)								
Total power input	kW	147	175	174	200	219	265	297
OA (without PFC)	A	240	285	295	331	356	441	491
cosφ (without PFC)	-	0,88	0,89	0,85	0,87	0,89	0,87	0,87
Rated power								
FLI	A	472	542	536	682	723	813	863
Max. power input	kW	267	306	293	350	374	440	468
FLA	A	425	492	477	560	595	708	751
cosφ (without PFC)		0,90	0,90	0,89	0,89	0,90	0,90	0,90
LRA	A	72	72	959	798	838	1032	1106
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x300 mm²
Control								
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz						
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2
Compressors								
Power input	kW	136	164	161	186	203	250	280
Nominal current	A	222	267	273	309	331	416	462
Single compressor 1 - FLA	A	374	440	232	300	300	374	374
Single compressor 1 - FLI	A	420	490	260	340	340	420	420
Single compressor 1 - LRA - Method starting	A	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.
Single compressor 2 - FLA	A			183	198	222	262	295
Single compressor 2 - FLI	A			214	280	310	320	360
Single compressor 2 - LRA - Method starting	A			665 - PW	436 - YD	465 - YD	586 - YD	650 - YD
Fans								
Fans number	-	10	10	12	12	14	14	16
Power input (2)	kW	1,1	1,1	1,1	1,1	1,1	1,1	1,1
Nominal current (2)	A	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Max. Current (2)	A	5,2	5,2	5,2	5,2	5,2	5,2	5,2
Pumps								
Std. head pump model	-	NB65-125/127	NB65-125/127	NB65-125/137	NB65-125/144	NB80-160/147	NB80-160/147	NB80-160/151
Nominal power	kW	5,5	5,5	7,5	11,0	11,0	11,0	15,0
Motor power	kW	6,1	6,1	8,4	12,1	12,1	12,1	16,4
Max. current	A	11,2	11,2	15,2	19,4	19,4	19,4	26,3
LRA	A	131	131	169	136	136	136	184
High head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/151	NB80-160/161
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5
Motor power	kW	8,4	12,1	12,1	16,4	16,4	16,4	20,1
Max. current	A	15,2	19,4	19,4	26,3	26,3	26,3	31,5
LRA	A	169	136	136	184	184	184	221
Inverter pump model	-	NBE65-125/137	NBE65-125/144	NBE65-125/144	NBE65-160/173	NBE80-160/151	NBE80-160/151	NBE80-160/161
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	15,0	18,5

Motor power	kW	8,6	12,4	12,4	17,7	17,5	17,5	21,6
Max. current	A	13,4	19,3	19,3	26,6	28,0	28,0	34,0

(1) At nominal conditions: 30% eth.glycol inlet/outet temperatures 26/20°C, outdoor air temperature 35°C
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

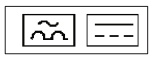


Table 10.11 – Electrical Data - FIZ*SG0 Models**

Models FIZ***SG0		065	075	080	085	095	110	125
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz						
Operating (1)								
Total power input (2)	kW	159	185	191	213	236	278	313
OA (without PFC) (2)	A	258	300	319	350	383	461	513
cosφ (without PFC) (2)	-	0,89	0,89	0,86	0,88	0,89	0,87	0,88
Rated power								
FLI	A	469	539	533	679	719	809	858
Max. power input	kW	265	304	291	347	371	438	465
FLA	A	422	489	474	557	591	704	746
cosφ (without PFC)		0,91	0,90	0,89	0,90	0,90	0,90	0,90
LRA	A	69	69	956	795	834	1028	1101
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x300 mm²
Control								
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz						
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2
Compressors								
Power input	kW	127	153	152	175	191	233	262
Nominal current	A	209	251	260	291	314	392	435
Single compressor 1 - FLA	A	374	440	232	300	300	374	374
Single compressor 1 - FLI	A	420	490	260	340	340	420	420
Single compressor 1 - LRA - Method starting	A	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.
Single compressor 2 - FLA	A			183	198	222	262	295
Single compressor 2 - FLI	A			214	280	310	320	360
Single compressor 2 - LRA - Method starting	A			665 - PW	436 - YD	465 - YD	586 - YD	650 - YD
Fans								
Fans number	-	10	10	12	12	14	14	16
Power input (2)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Nominal current (2)	A	4,9	4,9	4,9	4,9	4,9	4,9	4,9
Max. Current (2)	A	4,8	4,8	4,8	4,8	4,8	4,8	4,8
Pumps								
Std. head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/161	NB80-160/161
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	18,5	18,5
Motor power	kW	8,4	12,1	12,1	16,4	16,4	20,1	20,1
Max. current	A	15,2	19,4	19,4	26,3	26,3	31,5	31,5
LRA	A	169	136	136	184	184	221	221
High head pump model	-	NB65-160/157	NB65-160/173	NB65-160/173	NB65-160/177	NB80-160/161	NB80-160/167	NB80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	22,0	22,0
Motor power	kW	12,1	16,4	16,4	20,0	20,1	23,4	23,4
Max. current	A	19,4	26,3	26,3	31,5	31,5	38,0	38,0

LRA	A	136	184	184	221	221	274	274
Inverter pump model	-	NBE65-160/157	NBE65-160/173	NBE65-160/173	NBE65-160/177	NBE80-160/161	NBE80-160/167	NBE80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	22,0	22,0
Motor power	kW	12,4	17,7	17,7	21,4	21,6	25,2	25,2
Max. current	A	19,3	26,6	26,6	32,3	34,0	39,9	39,9

(1) At nominal conditions: 30% eth.glycol inlet/outet temperatures 26/20°C, outdoor air temperature 35°C
(2) Base EC fans versions
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

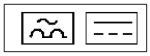


Table 10.12 – Electrical Data - FIZ*SG0 Low Noise Models**

Models FIZ***SG0L		065	075	080	085	095	110	125
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz						
Operating (1)								
Total power input	kW	152	181	180	206	225	275	308
OA (without PFC)	A	247	294	303	340	366	455	506
cosφ (without PFC)	-	0,89	0,89	0,86	0,88	0,89	0,87	0,88
Rated power								
FLI	A	472	542	536	682	723	813	863
Max. power input	kW	267	306	293	350	374	440	468
FLA	A	425	492	477	560	595	708	751
cosφ (without PFC)		0,90	0,90	0,89	0,89	0,90	0,90	0,90
LRA	A	72	72	959	798	838	1032	1106
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x300 mm²
Control								
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz						
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2
Compressors								
Power input	kW	140	169	166	192	208	258	289
Nominal current	A	228	275	280	317	339	428	476
Single compressor 1 - FLA	A	374	440	232	300	300	374	374
Single compressor 1 - FLI	A	420	490	260	340	340	420	420
Single compressor 1 - LRA - Method starting	A	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.
Single compressor 2 - FLA	A			183	198	222	262	295
Single compressor 2 - FLI	A			214	280	310	320	360
Single compressor 2 - LRA - Method starting	A			665 - PW	436 - YD	465 - YD	586 - YD	650 - YD
Fans								
Fans number	-	10	10	12	12	14	14	16
Power input (2)	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Nominal current (2)	A	1,9	1,9	1,9	1,9	1,9	1,9	1,9
Max. Current (2)	A	5,2	5,2	5,2	5,2	5,2	5,2	5,2
Pumps								
Std. head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/161	NB80-160/161
Nominal power	kW	7,5	11,0	11,0	15,0	15,0	18,5	18,5
Motor power	kW	8,4	12,1	12,1	16,4	16,4	20,1	20,1
Max. current	A	15,2	19,4	19,4	26,3	26,3	31,5	31,5
LRA	A	169	136	136	184	184	221	221

High head pump model	-	NB65-160/157	NB65-160/173	NB65-160/173	NB65-160/177	NB80-160/161	NB80-160/167	NB80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	22,0	22,0
Motor power	kW	12,1	16,4	16,4	20,0	20,1	23,4	23,4
Max. current	A	19,4	26,3	26,3	31,5	31,5	38,0	38,0
LRA	A	136	184	184	221	221	274	274
Inverter pump model	-	NBE65-160/157	NBE65-160/173	NBE65-160/173	NBE65-160/177	NBE80-160/161	NBE80-160/167	NBE80-160/167
Nominal power	kW	11,0	15,0	15,0	18,5	18,5	22,0	22,0
Motor power	kW	12,4	17,7	17,7	21,4	21,6	25,2	25,2
Max. current	A	19,3	26,6	26,6	32,3	34,0	39,9	39,9
LRA	A	19	27	27	32	34	40	40

(1) At nominal conditions: 30% eth.glycol inlet/outet temperatures 26/20°C, outdoor air temperature 35°C
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

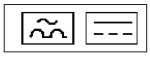


Table 10.13 – Electrical Data - NH4*HG0 Models**

Models NH4***HG0		065	075	080	090	100	110	125	140	165	180	195
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz										
Operating (1)												
Total power input (2)	kW	166	190	212	241	258	276	318	361	410	485	523
OA (without PFC) (2)	A	285	323	352	422	442	463	527	597	670	794	851
cosφ (without PFC) (2)	-	0,84	0,85	0,87	0,83	0,84	0,86	0,87	0,87	0,88	0,88	0,89
cosφ (with PFC) (2)	-	0,94	0,94	0,94	0,95	0,94	0,93	0,93	0,95	0,95	0,94	0,94
Rated power												
FLI	A	481	541	579	679	749	809	918	978	988	1230	1118
Max. power input	kW	238	268	302	334	355	370	426	473	536	640	592
FLA	A	391	437	493	559	586	603	690	766	860	1032	956
cosφ (without PFC)		0,88	0,88	0,89	0,86	0,88	0,89	0,89	0,89	0,90	0,90	0,89
FLA (with PFC)	A	363	409	464	531	538	563	658	734	815	984	908
cosφ (with PFC)		0,95	0,94	0,94	0,91	0,95	0,95	0,94	0,93	0,95	0,94	0,94
LRA	A	832	908	1005	1066	1093	922	1034	1227	1279	1482	1444
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/ Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x400 mm²	2x400 mm²	2x500 mm²	2x500 mm²
Control												
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz										
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	'1,5/35	'1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2	2	2	2
Compressors												
Power input	kW	134	158	174	203	213	231	267	310	352	421	459
Nominal current	A	236	274	293	363	373	394	449	519	582	696	753
Single compressor 1 - FLA	A	171	194	217	250	267	267	306	344	386	467	429
Single compressor 1 - FLI	A	216	246	260	310	370	370	420	450	450	566	510
Single compressor 1 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	586 - YD	586 - YD	650 - YD	805 - YD	805 - YD	917 - YD	917 - YD
Single compressor 2 - FLA	A	171	194	217	250	250	267	306	344	386	467	429
Single compressor 2 - FLI	A	216	246	260	310	310	370	420	450	450	566	510
Single compressor 2 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	757 - PW	586 - YD	650 - YD	805 - YD	805 - YD	917 - YD	917 - YD

Fans												
Fans number	-	10	10	12	12	14	14	16	16	18	20	20
Power input (2)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Nominal current (2)	A	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9
Max. Current (2)	A	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,9	4,9	4,9
Pumps												
Std. head pump model	-	NB65-125/120-110	NB65-125/127	NB65-125/127	NB65-125/127	NB65-125/127	NB65-125/137	NB65-125/144	NB80-160/151	NB80-160/147	NB80-160/151	NB80-160/151
Nominal power	kW	4,0	5,5	5,5	5,5	5,5	7,5	11,0	15,0	11,0	15,0	15,0
Motor power	kW	4,5	6,1	6,1	6,1	6,1	8,4	12,1	16,4	12,1	16,4	16,4
Max. current	A	8,0	11,2	11,2	11,2	11,2	15,2	19,4	26,3	19,4	26,3	26,3
LRA	A	98	131	131	131	131	169	136	184	136	184	184
High head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-125/144	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/161	NB80-160/161	NB80-160/161	NB80-160/161
Nominal power	kW	7,5	11,0	11,0	11,0	11,0	11,0	15,0	18,5	18,5	18,5	18,5
Motor power	kW	8,4	12,1	12,1	12,1	12,1	12,1	16,4	20,1	20,1	20,1	20,1
Max. current	A	15,2	19,4	19,4	19,4	19,4	19,4	26,3	31,5	31,5	31,5	31,5
LRA	A	169	136	136	136	136	136	184	221	221	221	221
Inverter pump model	-	NBE65-125/137	NBE65-125/144	NBE65-125/144	NBE65-125/144	NBE65-125/144	NBE65-125/144	NBE65-160/173	NBE80-160/161	NBE80-160/161	NBE80-160/161	NBE80-160/161
Nominal power	kW	7,5	11,0	11,0	11,0	11,0	11,0	15,0	18,5	18,5	18,5	18,5
Motor power	kW	8,6	12,4	12,4	21,4	12,4	12,4	17,7	21,7	21,7	21,7	21,7
Max. current	A	13,4	19,3	19,3	19,3	19,3	19,3	26,6	34,0	34,0	34,0	34,0
No-Glycol pump model	-	NBE65-160/157	NBE65-160/157	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/161	NBE80-160/161	NBE 100-160/160-154	NBE 100-160/167	NBE 100-160/167
Nominal power	kW	11,0	11,0	15,0	15,0	15,0	15,0	18,5	18,5	18,5	22,0	22,0
Motor power	kW	12,4	12,4	17,5	17,5	17,5	17,5	21,7	21,7	21,7	25,2	25,2
Max. current	A	19,3	19,3	28,0	28,0	28,0	28,0	34,0	34,0	34,0	39,9	39,9

(1) At nominal conditions: water inlet/outet temperatures 29/20°C, outdoor air temperature 35°C
(2) Base EC fans versions
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

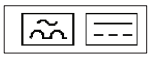


Table 10.14 – Electrical Data - NH4*HG0 Low Noise Models**

Models NH4***HG0L		065	075	080	090	100	110	125	140	165	180	195
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz										
Operating (1)												
Total power input (2)	kW	155	182	200	234	246	266	307	358	408	481	525
OA (without PFC) (2)	A	268	311	335	410	423	447	509	592	666	788	855
cosφ (without PFC) (2)	-	0,83	0,84	0,86	0,83	0,84	0,86	0,87	0,87	0,88	0,88	0,89
cosφ (with PFC) (2)	-	0,95	0,94	0,94	0,95	0,94	0,93	0,93	0,95	0,95	0,94	0,94
Rated power												
FLI	A	484	544	582	682	753	813	923	983	994	1236	1124
Max. power input	kW	240	270	305	336	358	373	429	476	539	644	596
FLA	A	394	440	496	562	590	607	695	771	866	1038	962
cosφ (without PFC)		0,88	0,88	0,89	0,86	0,88	0,89	0,89	0,89	0,90	0,90	0,89
FLA (with PFC)	A	366	412	468	535	542	568	663	738	820	990	915
cosφ (with PFC)		0,95	0,94	0,94	0,91	0,95	0,95	0,94	0,93	0,95	0,94	0,94
LRA	A	835	911	1008	1069	1097	926	1039	1232	1285	1488	1450
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/1250aM	1250gG/1250aM	1250gG/1250aM	1250gG/1250aM	1250gG/1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x400 mm²	2x400 mm²	2x500 mm²	2x500 mm²
Control												
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz										

Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2	2	2	2
Compressors												
Power input	kW	143	170	186	220	229	249	288	339	386	457	501
Nominal current	A	249	292	312	387	396	420	479	562	632	750	817
Single compressor 1 - FLA	A	171	194	217	250	267	267	306	344	386	467	429
Single compressor 1 - FLI	A	216	246	260	310	370	370	420	450	450	566	510
Single compressor 1 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	586 - PW	586 - YD	650 - YD	805 - YD	805 - YD	917 - YD	917 - YD
Single compressor 2 - FLA	A	171	194	217	250	250	267	306	344	386	467	429
Single compressor 2 - FLI	A	216	246	260	310	310	370	420	450	450	566	510
Single compressor 2 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	757 - YD	586 - YD	650 - YD	805 - YD	805 - YD	917 - YD	917 - YD
Fans												
Fans number	-	10	10	12	12	14	14	16	16	18	20	20
Power input	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Nominal current	A	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9
Max. Current	A	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
Pumps												
Std. head pump model	-	NB65-125/120-110	NB65-125/127	NB65-125/127	NB65-125/127	NB65-125/127	NB65-125/137	NB65-125/144	NB80-160/151	NB80-160/147	NB80-160/151	NB80-160/151
Nominal power	kW	4,0	5,5	5,5	5,5	5,5	7,5	11,0	15,0	11,0	15,0	15,0
Motor power	kW	4,5	6,1	6,1	6,1	6,1	8,4	12,1	16,4	12,1	16,4	16,4
Max. current	A	8,0	11,2	11,2	11,2	11,2	15,2	19,4	26,3	19,4	26,3	26,3
LRA	A	98	131	131	131	131	169	136	184	136	184	184
High head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-125/144	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/161	NB80-160/161	NB80-160/161	NB80-160/161
Nominal power	kW	7,5	11,0	11,0	11,0	11,0	11,0	15,0	18,5	18,5	18,5	18,5
Motor power	kW	8,4	12,1	12,1	12,1	12,1	12,1	16,4	20,1	20,1	20,1	20,1
Max. current	A	15,2	19,4	19,4	19,4	19,4	19,4	26,3	31,5	31,5	31,5	31,5
LRA	A	169	136	136	136	136	136	184	221	221	221	221
Inverter pump model	-	NBE65-125/137	NBE65-125/144	NBE65-125/144	NBE65-125/144	NBE65-125/144	NBE65-125/144	NBE65-160/173	NBE80-160/161	NBE80-160/161	NBE80-160/161	NBE80-160/161
Nominal power	kW	7,5	11,0	11,0	11,0	11,0	11,0	15,0	18,5	18,5	18,5	18,5
Motor power	kW	8,6	12,4	12,4	12,4	12,4	12,4	17,7	21,7	21,7	21,7	21,7
Max. current	A	13,4	19,3	19,3	19,3	19,3	19,3	26,6	34,0	34,0	34,0	34,0
No-Glycol pump model	-	NBE65-160/157	NBE65-160/157	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/161	NBE80-160/161	NBE 100-160/160-154	NBE 100-160/167	NBE 100-160/167
Nominal power	kW	11,0	11,0	15,0	15,0	15,0	15,0	18,5	18,5	18,5	22,0	22,0
Motor power	kW	12,4	12,4	17,5	17,5	17,5	17,5	21,7	21,7	21,7	25,2	25,2
Max. current	A	19,3	19,3	28,0	28,0	28,0	28,0	34,0	34,0	34,0	39,9	39,9

(1) At nominal conditions: water inlet/outet temperatures 29/20°C, outdoor air temperature 35°C
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

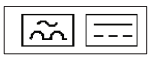


Table 10.15 – Electrical Data - CH4*HG0 Models**

Models CH4***HG0		065	075	080	090	100	110	125	140	165	180	195
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz										
Operating (1)												
Total power input (2)	kW	161	184	206	234	250	267	309	348	396	470	505
OA (without PFC) (2)	A	278	315	342	411	430	450	514	580	650	771	825
cosφ (without PFC) (2)	-	0,84	0,84	0,87	0,82	0,84	0,86	0,87	0,87	0,88	0,88	0,88
cosφ (with PFC) (2)	-	0,94	0,94	0,94	0,95	0,94	0,93	0,93	0,95	0,95	0,94	0,94

Rated power												
FLI	A	481	541	579	679	749	809	918	978	988	1230	1118
Max. power input	kW	238	268	302	334	355	370	426	473	536	640	592
FLA	A	391	437	493	559	586	603	690	766	860	1032	956
cosφ (without PFC)		0,88	0,88	0,89	0,86	0,88	0,89	0,89	0,89	0,90	0,90	0,89
FLA (with PFC)	A	363	409	464	531	538	563	658	734	815	984	908
cosφ (with PFC)		0,95	0,94	0,94	0,91	0,95	0,95	0,94	0,93	0,95	0,94	0,94
LRA	A	832	908	1005	1066	1093	922	1034	1227	1279	1482	1444
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/ Nm	M12 / 50- 75Nm	M12 / 50- 75Nm	M12 / 50- 75Nm	M12 / 50- 75Nm	M12 / 50- 75Nm	M12 / 50- 75Nm	M12 / 50- 75Nm	M12 / 50- 75Nm	M12 / 50- 75Nm	M12 / 50- 75Nm	M12 / 50- 75Nm
QSA Minimun Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x400 mm²	2x400 mm²	2x500 mm²	2x500 mm²
Control												
Control power supply (only for option Fast-Start)	V/Ph/ Hz	230V / 1Ph + N + PE / 50Hz										
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2	2	2	2
Compressors												
Power input	kW	131	154	170	198	208	225	261	300	342	410	445
Nominal current	A	232	269	287	356	366	386	440	506	567	679	733
Single compressor 1 - FLA	A	171	194	217	250	267	267	306	344	386	467	429
Single compressor 1 - FLI	A	216	246	260	310	370	370	420	450	450	566	510
Single compressor 1 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	586 - PW	586 - YD	650 - YD	805 - YD	805 - YD	917 - YD	917 - YD
Single compressor 2 - FLA	A	171	194	217	250	250	267	306	344	386	467	429
Single compressor 2 - FLI	A	216	246	260	310	310	370	420	450	450	566	510
Single compressor 2 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	757 - YD	586 - YD	650 - YD	805 - YD	805 - YD	917 - YD	917 - YD
Fans												
Fans number	-	10	10	12	12	14	14	16	16	18	20	20
Power input (2)	kW	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0
Nominal current (2)	A	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6
Max. Current (2)	A	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,9	4,9	4,9
Pumps												
Std. head pump model	-	NB65- 125/ 120-110	NB65- 125/ 120-110	NB65- 125/127	NB65- 125/127	NB65- 125/127	NB65- 125/137	NB65- 125/144	NB80- 160/147	NB80- 160/147	NB80- 160/147	NB80- 160/151
Nominal power	kW	4,0	4,0	5,5	5,5	5,5	7,5	11,0	11,0	11,0	11,0	15,0
Motor power	kW	4,5	4,5	6,1	6,1	6,1	8,4	12,1	12,1	12,1	12,1	16,4
Max. current	A	8,0	8,0	11,2	11,2	11,2	15,2	19,4	19,4	19,4	19,4	26,3
LRA	A	98	98	131	131	131	169	136	136	136	136	184
High head pump model	-	NB65- 125/127	NB65- 125/137	NB65- 125/137	NB65- 125/137	NB65- 125/144	NB65- 125/144	NB65- 160/173	NB80- 160/151	NB80- 160/151	NB80- 160/161	NB80- 160/161
Nominal power	kW	5,5	7,5	7,5	7,5	11,0	11,0	15,0	15,0	15,0	18,5	18,5
Motor power	kW	6,1	8,4	8,4	8,4	12,1	12,1	16,4	16,4	16,4	20,1	20,1
Max. current	A	11,2	15,2	15,2	15,2	19,4	19,4	26,3	26,3	26,3	31,5	31,5
LRA	A	131	169	169	169	136	136	184	184	184	221	221
Inverter pump model	-	NBE65- 125/127	NBE65- 125/137	NBE65- 125/137	NBE65- 125/137	NBE65- 125/144	NBE65- 125/144	NBE65- 160/173	NBE80- 160/151	NBE80- 160/151	NBE80- 160/161	NBE80- 160/161
Nominal power	kW	5,5	7,5	7,5	7,5	11,0	11,0	15,0	15,0	15,0	18,5	18,5
Motor power	kW	6,5	8,6	8,6	8,6	12,4	12,4	17,7	17,5	17,5	21,7	21,7
Max. current	A	10,5	13,4	13,4	13,4	19,3	19,3	26,6	28,0	28,0	34,0	34,0

(1) At nominal conditions: water inlet/outet temperatures 29/20°C, outdoor air temperature 35°C
(2) Base EC fans versions
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

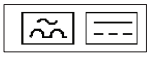


Table 10.16 – Electrical Data - CH4***HG0 Low Noise Models

Models CH4***HG0L		065	075	080	090	100	110	125	140	165	180	195
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz										
Operating (1)												
Total power input	kW	150	176	194	226	237	257	297	345	392	464	506
OA (without PFC)	A	260	301	324	397	410	433	493	571	644	764	827
cosφ (without PFC)	-	0,83	0,84	0,86	0,82	0,84	0,86	0,87	0,87	0,88	0,88	0,88
cosφ (with PFC)	-	0,95	0,94	0,94	0,95	0,94	0,93	0,93	0,95	0,95	0,94	0,94
Rated power												
FLI	A	484	544	582	682	753	813	923	983	994	1236	1124
Max. power input	kW	240	270	305	336	358	373	429	476	539	644	596
FLA	A	394	440	496	562	590	607	695	771	866	1038	962
cosφ (without PFC)		0,88	0,88	0,89	0,86	0,88	0,89	0,89	0,89	0,90	0,90	0,89
FLA (with PFC)	A	366	412	468	535	542	568	663	771	820	990	915
cosφ (with PFC)		0,95	0,94	0,94	0,91	0,95	0,95	0,94	0,89	0,95	0,94	0,94
LRA	A	835	911	1008	1069	1097	926	1039	1232	1285	1488	1450
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/ Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x400 mm²	2x400 mm²	2x500 mm²	2x500 mm²
Control												
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz										
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2	2	2	2
Compressors												
Power input	kW	139	165	181	213	222	242	279	327	372	442	484
Nominal current	A	243	284	304	377	386	409	466	544	612	728	791
Single compressor 1 - FLA	A	171	194	217	250	267	267	306	344	386	467	429
Single compressor 1 - FLI	A	216	246	260	310	370	370	420	450	450	566	510
Single compressor 1 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	586 - PW	586 - YD	650 - YD	805 - YD	805 - YD	917 - YD	917 - YD
Single compressor 2 - FLA	A	171	194	217	250	250	267	306	344	386	467	429
Single compressor 2 - FLI	A	216	246	260	310	310	370	420	450	450	566	510
Single compressor 2 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	757 - YD	586 - YD	650 - YD	805 - YD	805 - YD	917 - YD	917 - YD
Fans												
Fans number	-	10	10	12	12	14	14	16	16	18	20	20
Power input	kW	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1
Nominal current	A	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,8	1,8	1,8
Max. Current	A	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
Pumps												
Std. head pump model	-	NB65-125/120-110	NB65-125/120-110	NB65-125/127	NB65-125/127	NB65-125/127	NB65-125/137	NB65-125/144	NB80-160/147	NB80-160/147	NB80-160/147	NB80-160/151
Nominal power	kW	4,0	4,0	5,5	5,5	5,5	7,5	11,0	11,0	11,0	11,0	15,0
Motor power	kW	4,5	4,5	6,1	6,1	6,1	8,4	12,1	12,1	12,1	12,1	16,4
Max. current	A	8,0	8,0	11,2	11,2	11,2	15,2	19,4	19,4	19,4	19,4	26,3
LRA	A	98	98	131	131	131	169	136	136	136	136	184
High head pump model	-	NB65-125/127	NB65-125/137	NB65-125/137	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/151	NB80-160/161	NB80-160/161
Nominal power	kW	5,5	7,5	7,5	7,5	11,0	11,0	15,0	15,0	15,0	18,5	18,5
Motor power	kW	6,1	8,4	8,4	8,4	12,1	12,1	16,4	16,4	16,4	20,1	20,1

Max. current	A	11,2	15,2	15,2	15,2	19,4	19,4	26,3	26,3	26,3	31,5	31,5
LRA	A	131	169	169	169	136	136	184	184	184	221	221
Inverter pump model	-	NBE65-125/127	NBE65-125/137	NBE65-125/137	NBE65-125/137	NBE65-125/144	NBE65-125/144	NBE65-160/173	NBE80-160/151	NBE80-160/151	NBE80-160/161	NBE80-160/161
Nominal power	kW	5,5	7,5	7,5	7,5	11,0	11,0	15,0	15,0	15,0	18,5	18,5
Motor power	kW	6,5	8,6	8,6	8,6	12,4	12,4	17,7	17,5	17,5	21,7	21,7
Max. current	A	10,5	13,4	13,4	13,4	19,3	19,3	26,6	28,0	28,0	34,0	34,0

(1) At nominal conditions: water inlet/outet temperatures 29/20°C, outdoor air temperature 35°C
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

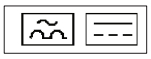


Table 10.17 – Electrical Data - FH4*HG0 Models**

Models FH4***HG0		065	075	080	090	100	110	125	140	165	180	195
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz										
Operating (1)												
Total power input (2)	kW	164	188	210	239	257	274	316	358	407	482	519
OA (without PFC) (2)	A	283	321	349	419	440	460	524	594	666	789	845
cosφ (without PFC) (2)	-	0,84	0,85	0,87	0,83	0,84	0,86	0,87	0,87	0,88	0,88	0,88
cosφ (with PFC) (2)	-	0,94	0,94	0,94	0,95	0,94	0,93	0,93	0,95	0,95	0,94	0,94
Rated power												
FLI	A	481	541	579	679	749	809	918	978	988	1230	1118
Max. power input	kW	238	268	302	334	355	370	426	473	536	640	592
FLA	A	391	437	493	559	586	603	690	766	860	1032	956
cosφ (without PFC)		0,88	0,88	0,89	0,86	0,88	0,89	0,89	0,89	0,90	0,90	0,89
FLA (with PFC)	A	363	409	464	531	538	563	658	734	815	984	908
cosφ (with PFC)		0,95	0,94	0,94	0,91	0,95	0,95	0,94	0,93	0,95	0,94	0,94
LRA	A	832	908	1005	1066	1093	922	1034	1227	1279	1482	1444
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/ Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x400 mm²	2x400 mm²	2x500 mm²	2x500 mm²
Control												
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz										
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2	2	2	2
Compressors												
Power input	kW	132	156	172	201	212	229	265	307	349	418	455
Nominal current	A	234	272	290	360	371	391	446	516	578	691	747
Single compressor 1 - FLA	A	171	194	217	250	267	267	306	344	386	467	429
Single compressor 1 - FLI	A	216	246	260	310	370	370	420	450	450	566	510
Single compressor 1 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	586 - PW	586 - YD	650 - YD	805 - YD	805 - YD	917 - YD	917 - YD
Single compressor 2 - FLA	A	171	194	217	250	250	267	306	344	386	467	429
Single compressor 2 - FLI	A	216	246	260	310	310	370	420	450	450	566	510
Single compressor 2 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	757 - YD	586 - YD	650 - YD	805 - YD	805 - YD	917 - YD	917 - YD
Fans												
Fans number	-	10	10	12	12	14	14	16	16	18	20	20
Power input (2)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Nominal current (2)	A	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9
Max. Current (2)	A	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,9	4,9	4,9

Pumps												
Std. head pump model	-	NB65-125/127	NB65-125/137	NB65-125/137	NB65-125/144	NB65-160/157	NB65-160/157	NB80-160/151	NB80-160/151	NB80-160/161	NB80-160/161	NB80-160/167
Nominal power	kW	5,5	7,5	7,5	11,0	11,0	11,0	15,0	15,0	18,5	18,5	22,0
Motor power	kW	6,1	8,4	8,4	12,1	12,1	12,1	16,4	16,4	20,1	20,1	23,4
Max. current	A	11,2	15,2	15,2	19,4	19,4	19,4	26,3	26,3	31,5	31,5	38,0
LRA	A	131	169	169	136	136	136	184	184	221	221	274
High head pump model	-	NB65-125/144	NB65-160/157	NB65-160/157	NB65-160/173	NB65-160/173	NB65-160/177	NB80-160/167	NB80-160/167	NB80-160/167	NB80-160/177	NB80-160/177
Nominal power	kW	11,0	11,0	11,0	15,0	15,0	18,5	22,0	22,0	22,0	30,0	30,0
Motor power	kW	12,1	12,1	12,1	16,4	16,4	20,0	23,4	23,4	23,4	32,1	32,1
Max. current	A	19,4	19,4	19,4	26,3	26,3	31,5	38,0	38,0	38,0	52,0	52,0
LRA	A	136	136	136	184	184	221	274	274	274	364	364
Inverter pump model	-	NBE65-125/144	NBE65-160/157	NBE65-160/157	NBE65-160/173	NBE65-160/173	NBE65-160/177	NBE80-160/167	NBE80-160/167	NBE80-160/167	NBE80-160/167	NBE80-160/167
Nominal power	kW	11,0	11,0	11,0	15,0	15,0	18,5	22,0	22,0	22,0	22,0	22,0
Motor power	kW	12,4	12,4	12,4	21,4	17,7	21,4	25,2	25,2	25,2	25,2	25,2
Max. current	A	19,3	19,3	19,3	26,6	26,6	32,3	39,9	39,9	39,9	39,9	39,9

(1) At nominal conditions: 30% eth.glycol inlet/outet temperatures 29/20°C, outdoor air temperature 35°C
(2) Base EC fans versions
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

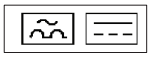


Table 10.18 – Electrical Data - FH4*HG0 Low Noise Models**

Models FH4***HG0L		065	075	080	090	100	110	125	140	165	180	195
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz										
Operating (1)												
Total power input	kW	153	180	198	231	244	264	304	354	404	476	520
OA (without PFC)	A	265	308	332	406	420	444	505	587	661	781	848
cosφ (without PFC)	-	0,83	0,84	0,86	0,82	0,84	0,86	0,87	0,87	0,88	0,88	0,88
cosφ (with PFC)	-	0,95	0,94	0,94	0,95	0,94	0,93	0,93	0,95	0,95	0,94	0,94
Rated power												
FLI	A	484	544	582	682	753	813	923	983	994	1236	1124
Max. power input	kW	240	270	305	336	358	373	429	476	539	644	596
FLA	A	394	440	496	562	590	607	695	771	866	1038	962
cosφ (without PFC)		0,88	0,88	0,89	0,86	0,88	0,89	0,89	0,89	0,90	0,90	0,89
FLA (with PFC)	A	366	412	468	535	542	568	663	771	820	990	915
cosφ (with PFC)		0,95	0,94	0,94	0,91	0,95	0,95	0,94	0,89	0,95	0,94	0,94
LRA	A	832	908	1008	1069	1097	926	1039	1232	1285	1488	1450
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/ Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x400 mm²	2x400 mm²	2x500 mm²	2x500 mm²
Control												
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz										
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2	2	2	2
Compressors												
Power input	kW	141	168	184	217	227	247	285	335	382	452	496
Nominal current	A	246	289	309	383	393	417	475	557	627	743	810
Single compressor 1 - FLA	A	171	194	217	250	267	267	306	344	386	467	429
Single compressor 1 - FLI	A	216	246	260	310	370	370	420	450	450	566	510

Single compressor 1 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	586 - PW	586 - YD	650 - YD	805 - YD	805 - YD	917 - YD	917 - YD
Single compressor 2 - FLA	A	171	194	217	250	250	267	306	344	386	467	429
Single compressor 2 - FLI	A	216	246	260	310	310	370	420	450	450	566	510
Single compressor 2 - LRA - Method starting	A	612 - PW	665 - PW	729 - PW	757 - PW	757 - YD	586 - YD	650 - YD	805 - YD	805 - YD	917 - YD	917 - YD
Fans												
Fans number	-	10	10	12	12	14	14	16	16	18	20	20
Power input	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Nominal current	A	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9
Max. Current	A	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
Pumps												
Std. head pump model	-	NB65-125/127	NB65-125/137	NB65-125/137	NB65-125/144	NB65-160/157	NB65-160/157	NB80-160/151	NB80-160/151	NB80-160/161	NB80-160/161	NB80-160/167
Nominal power	kW	5,5	7,5	7,5	11,0	11,0	11,0	15,0	15,0	18,5	18,5	22,0
Motor power	kW	6,1	8,4	8,4	12,1	12,1	12,1	16,4	16,4	20,1	20,1	23,4
Max. current	A	11,2	15,2	15,2	19,4	19,4	19,4	26,3	26,3	31,5	31,5	38,0
LRA	A	131	169	169	136	136	136	184	184	221	221	274
High head pump model	-	NB65-125/144	NB65-160/157	NB65-160/157	NB65-160/173	NB65-160/173	NB65-160/177	NB80-160/167	NB80-160/167	NB80-160/167	NB80-160/177	NB80-160/177
Nominal power	kW	11,0	11,0	11,0	15,0	15,0	18,5	22,0	22,0	22,0	30,0	30,0
Motor power	kW	12,1	12,1	12,1	16,4	16,4	20,0	23,4	23,4	23,4	32,1	32,1
Max. current	A	19,4	19,4	19,4	26,3	26,3	31,5	38,0	38,0	38,0	52,0	52,0
LRA	A	136	136	136	184	184	221	274	274	274	364	364
Inverter pump model	-	NBE65-125/144	NBE65-160/157	NBE65-160/157	NBE65-160/173	NBE65-160/173	NBE65-160/177	NBE80-160/167	NBE80-160/167	NBE80-160/167	NBE80-160/167	NBE80-160/167
Nominal power	kW	11,0	11,0	11,0	15,0	15,0	18,5	22,0	22,0	22,0	22,0	22,0
Motor power	kW	12,4	12,4	12,4	17,7	17,7	21,4	25,2	25,2	25,2	25,2	25,2
Max. current	A	19,3	19,3	19,3	26,6	26,6	32,3	39,9	39,9	39,9	39,9	39,9

(1) At nominal conditions: 30% eth.glycol inlet/outet temperatures 29/20°C, outdoor air temperature 35°C
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

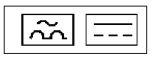


Table 10.19 – Electrical Data - NIZ*HG0 Models**

Models NIZ***HG0		065	075	080	085	095	110	125	140	150
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz								
Operating (1)										
Total power input (2)	kW	161	188	193	215	238	283	317	349	390
OA (without PFC) (2)	A	261	304	322	354	386	467	520	574	645
cosφ (without PFC) (2)	-	0,89	0,89	0,87	0,88	0,89	0,87	0,88	0,88	0,87
Rated power										
FLI	A	469	539	533	679	719	809	858	991	1035
Max. power input	kW	265	304	291	347	371	438	465	529	553
FLA	A	422	489	474	557	591	704	746	854	896
cosφ (without PFC)		0,91	0,90	0,88	0,90	0,91	0,90	0,90	0,89	0,89
LRA	A	88	88	956	795	834	1028	1101	1333	1455
Max. fuse (gG/aM)		800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/1250aM	1250gG/1250aM	1250gG/1250aM	1250gG/1250aM
Ring terminals with hole/Line screw fixing	A	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	A	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x300 mm²	2x500 mm²	2x500 mm²
Control										
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz								
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35

Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2	2
Compressors										
Power input	kW	129	156	155	177	193	238	266	291	326
Nominal current	A	212	255	263	295	317	398	442	486	547
Single compressor 1 - FLA	A	374	440	232	300	300	374	374	440	440
Single compressor 1 - FLI	A	420	490	260	340	340	420	420	490	490
Single compressor 1 - LRA - Method starting	A	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.
Single compressor 2 - FLA	A			183	198	222	262	295	326	358
Single compressor 2 - FLI	A			214	280	310	320	360	413	447
Single compressor 2 - LRA - Method starting	A			665 - PW	436 - YD	465 - YD	586 - YD	650 - YD	805 - YD	917 - YD
Fans										
Fans number	-	10	10	12	12	14	14	16	18	20
Power input (2)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Nominal current (2)	A	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9
Max. Current (2)	A	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4.8
Pumps										
Std. head pump model	-	NB65-125/120-110	NB65-125/127	NB65-125/127	NB65-125/127	NB65-125/127	NB65-125/137	NB65-125/144	NB80-160/147	NB80-160/147
Nominal power	kW	4,0	5,5	5,5	5,5	5,5	7,5	11,0	11,0	11,0
Motor power	kW	4,5	6,1	6,1	6,1	6,1	8,4	12,1	12,1	12,1
Max. current	A	8,0	11,2	11,2	11,2	11,2	15,2	19,4	19,4	19,4
LRA	A	98	131	131	131	131	169	136	136	136
High head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-125/144	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/151
Nominal power	kW	7,5	11,0	11,0	11,0	11,0	11,0	15,0	15,0	15,0
Motor power	kW	8,4	12,1	12,1	12,1	12,1	12,1	16,4	16,4	16,4
Max. current	A	15,2	19,4	19,4	19,4	19,4	19,4	26,3	26,3	26,3
LRA	A	169	136	136	136	136	136	184	184	184
Inverter pump model	-	NBE65-125/137	NBE65-125/144	NBE65-125/144	NBE65-125/144	NBE65-125/144	NBE65-125/144	NBE65-160/173	NBE80-160/151	NBE80-160/151
Nominal power	kW	7,5	11,0	11,0	11,0	11,0	11,0	15,0	15,0	15,0
Motor power	kW	8,6	12,4	12,4	21,4	12,4	12,4	17,7	17,5	17,5
Max. current	A	13,4	19,3	19,3	19,3	19,3	19,3	26,6	28,0	28,0
No-Glycol pump model	-	NBE65-160/157	NBE65-160/157	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/161	NBE80-160/161	NBE80-160/167
Nominal power	kW	11,0	11,0	15,0	15,0	15,0	15,0	18,5	18,5	22,0
Motor power	kW	12,4	12,4	17,5	17,5	17,5	17,5	21,7	21,7	25,2
Max. current	A	19,3	19,3	28,0	28,0	28,0	28,0	34,0	34,0	39,9

(1) At nominal conditions: water inlet/outet temperatures 29/20°C, outdoor air temperature 35°C
(2) Base EC fans versions
(3) PVC cable 40 °C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

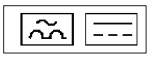


Table 10.20 – Electrical Data - NIZ*HG0 Low Noise Models**

Models NIZ***HG0L		065	075	080	085	095	110	125	140	150
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz								
Operating (1)										
Total power input	kW	155	184	183	210	229	281	314	342	382
OA (without PFC)	A	252	299	307	345	372	464	515	563	632
cosφ (without PFC)	-	0,89	0,89	0,86	0,88	0,89	0,87	0,88	0,88	0,87
Rated power										
FLI	A	472	542	536	682	723	813	863	997	1041
Max. power input	kW	267	306	293	350	374	440	468	533	557
FLA	A	425	492	477	560	595	708	751	860	902
cosφ (without PFC)		0,91	0,90	0,89	0,90	0,90	0,90	0,90	0,89	0,89

LRA	A	91	91	959	798	838	1032	1106	1339	1461
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/ Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x300 mm²	2x500 mm²	2x500 mm²
Control										
Control power supply (only for option Fast-Start)	V/Ph/ Hz	230V / 1Ph + N + PE / 50Hz								
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2	2
Compressors										
Power input	kW	143	172	169	196	212	264	295	320	358
Nominal current	A	233	280	284	322	345	437	485	529	594
Single compressor 1 - FLA	A	374	440	232	300	300	374	374	440	440
Single compressor 1 - FLI	A	420	490	260	340	340	420	420	490	490
Single compressor 1 - LRA - Method starting	A	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.
Single compressor 2 - FLA	A			183	198	222	262	295	326	358
Single compressor 2 - FLI	A			214	280	310	320	360	413	447
Single compressor 2 - LRA - Method starting	A			665 - PW	436 - YD	465 - YD	586 - YD	650 - YD	805 - YD	917 - YD
Fans										
Fans number	-	10	10	12	12	14	14	16	18	20
Power input	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Nominal current	A	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9
Max. Current	A	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
Pumps										
Std. head pump model	-	NB65-125/120-110	NB65-125/127	NB65-125/127	NB65-125/127	NB65-125/127	NB65-125/137	NB65-125/144	NB80-160/147	NB80-160/147
Nominal power	kW	4,0	5,5	5,5	5,5	5,5	7,5	11,0	11,0	11,0
Motor power	kW	4,5	6,1	6,1	6,1	6,1	8,4	12,1	12,1	12,1
Max. current	A	8,0	11,2	11,2	11,2	11,2	15,2	19,4	19,4	19,4
LRA	A	98	131	131	131	131	169	136	136	136
High head pump model	-	NB65-125/137	NB65-125/144	NB65-125/144	NB65-125/144	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/151
Nominal power	kW	7,5	11,0	11,0	11,0	11,0	11,0	15,0	15,0	15,0
Motor power	kW	8,4	12,1	12,1	12,1	12,1	12,1	16,4	16,4	16,4
Max. current	A	15,2	19,4	19,4	19,4	19,4	19,4	26,3	26,3	26,3
LRA	A	169	136	136	136	136	136	184	184	184
Inverter pump model	-	NBE65-125/137	NBE65-125/144	NBE65-125/144	NBE65-125/144	NBE65-125/144	NBE65-125/144	NBE65-160/173	NBE80-160/151	NBE80-160/151
Nominal power	kW	7,5	11,0	11,0	11,0	11,0	11,0	15,0	15,0	15,0
Motor power	kW	8,6	12,4	12,4	21,4	12,4	12,4	17,7	17,5	17,5
Max. current	A	13,4	19,3	19,3	19,3	19,3	19,3	26,6	28,0	28,0
No-Glycol pump model	-	NBE65-160/157	NBE65-160/157	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/151	NBE80-160/161	NBE80-160/161	NBE80-160/167
Nominal power	kW	11,0	11,0	15,0	15,0	15,0	15,0	18,5	18,5	22,0
Motor power	kW	12,4	12,4	17,5	17,5	17,5	17,5	21,7	21,7	25,2
Max. current	A	19,3	19,3	28,0	28,0	28,0	28,0	34,0	34,0	39,9

(1) At nominal conditions: water inlet/outet temperatures 29/20°C, outdoor air temperature 35°C
(3) PVC cable 40 °C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

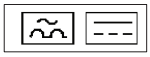


Table 10.21 – Electrical Data - CIZ***HG0 Models

Models CIZ***HG0		065	075	080	085	095	110	125	140	150
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz								
Operating (1)										
Total power input (2)	kW	155	181	187	208	233	272	306	337	377
OA (without PFC) (2)	A	252	293	312	342	377	451	503	556	625
cosφ (without PFC) (2)	-	0,89	0,89	0,86	0,88	0,89	0,87	0,88	0,88	0,87
Rated power										
FLI	A	469	539	533	679	719	809	858	991	1035
Max. power input	kW	265	304	291	347	371	438	465	529	553
FLA	A	422	489	474	557	591	704	746	854	896
cosφ (without PFC)		0,91	0,90	0,88	0,90	0,91	0,90	0,90	0,89	0,89
LRA	A	69	69	956	795	834	1028	1101	1333	1455
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/ Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x300 mm²	2x500 mm²	2x500 mm²
Control										
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz								
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2	2
Compressors										
Power input	kW	125	151	151	172	191	230	258	283	317
Nominal current	A	206	247	257	287	313	387	429	473	533
Single compressor 1 - FLA	A	374	440	232	300	300	374	374	440	440
Single compressor 1 - FLI	A	420	490	260	340	340	420	420	490	490
Single compressor 1 - LRA - Method starting	A	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.
Single compressor 2 - FLA	A			183	198	222	262	295	326	358
Single compressor 2 - FLI	A			214	280	310	320	360	413	447
Single compressor 2 - LRA - Method starting	A			665 - PW	436 - YD	465 - YD	586 - YD	650 - YD	805 - YD	917 - YD
Fans										
Fans number	-	10	10	12	12	14	14	16	18	20
Power input (2)	kW	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0
Nominal current (2)	A	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6	4,6
Max. Current (2)	A	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,9	4,9
Pumps										
Std. head pump model	-	NB65-125/120-110	NB65-125/120-110	NB65-125/127	NB65-125/127	NB65-125/127	NB65-125/137	NB65-125/144	NB80-160/147	NB80-160/147
Nominal power	kW	4,0	4,0	5,5	5,5	5,5	7,5	11,0	11,0	11,0
Motor power	kW	4,5	4,5	6,1	6,1	6,1	8,4	12,1	12,1	12,1
Max. current	A	8,0	8,0	11,2	11,2	11,2	15,2	19,4	19,4	19,4
LRA	A	98	98	131	131	131	169	136	136	136
High head pump model	-	NB65-125/127	NB65-125/137	NB65-125/137	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/151
Nominal power	kW	5,5	7,5	7,5	7,5	11,0	11,0	15,0	15,0	15,0
Motor power	kW	6,1	8,4	8,4	8,4	12,1	12,1	16,4	16,4	16,4
Max. current	A	11,2	15,2	15,2	15,2	19,4	19,4	26,3	26,3	26,3
LRA	A	131	169	169	169	136	136	184	184	184
Inverter pump model	-	NBE65-125/127	NBE65-125/137	NBE65-125/137	NBE65-125/137	NBE65-125/144	NBE65-125/144	NBE65-160/173	NBE80-160/151	NBE80-160/151

Nominal power	kW	5,5	7,5	7,5	7,5	11,0	11,0	15,0	15,0	15,0
Motor power	kW	6,5	8,6	8,6	8,6	12,4	12,4	17,7	17,5	17,5
Max. current	A	10,5	13,4	13,4	13,4	19,3	19,3	26,6	28,0	28,0

(1) At nominal conditions: water inlet/outet temperatures 29/20°C, outdoor air temperature 35°C
(2) Base EC fans versions
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

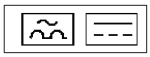


Table 10.22 – Electrical Data - CIZ*HG0 Low Noise Models**

Models CIZ***HG0L		065	075	080	085	095	110	125	140	150
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz								
Operating (1)										
Total power input	kW	148	176	176	201	220	268	301	328	367
OA (without PFC)	A	242	288	298	333	359	446	496	543	610
cosφ (without PFC)	-	0,88	0,88	0,85	0,87	0,89	0,87	0,88	0,87	0,87
Rated power										
FLI	A	472	542	536	682	723	813	863	997	1041
Max. power input	kW	267	306	293	350	374	440	468	533	557
FLA	A	425	492	477	560	595	708	751	860	902
cosφ (without PFC)		0,91	0,90	0,89	0,90	0,91	0,90	0,90	0,89	0,89
LRA	A	72	72	959	798	838	1032	1106	1339	1461
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/ Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x300 mm²	2x500 mm²	2x500 mm²
Control										
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz								
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2	2
Compressors										
Power input	kW	137	165	163	188	205	253	283	308	345
Nominal current	A	224	270	276	311	334	421	467	511	574
Single compressor 1 - FLA	A	374	440	232	300	300	374	374	440	440
Single compressor 1 - FLI	A	420	490	260	340	340	420	420	490	490
Single compressor 1 - LRA - Method starting	A	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.
Single compressor 2 - FLA	A			183	198	222	262	295	326	358
Single compressor 2 - FLI	A			214	280	310	320	360	413	447
Single compressor 2 - LRA - Method starting	A			665 - PW	436 - YD	465 - YD	586 - YD	650 - YD	805 - YD	917 - YD
Fans										
Fans number	-	10	10	12	12	14	14	16	18	20
Power input	kW	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1	1,1
Nominal current	A	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Max. Current	A	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
Pumps										
Std. head pump model	-	NB65-125/120-110	NB65-125/120-110	NB65-125/127	NB65-125/127	NB65-125/127	NB65-125/137	NB65-125/144	NB80-160/147	NB80-160/147
Nominal power	kW	4,0	4,0	5,5	5,5	5,5	7,5	11,0	11,0	11,0
Motor power	kW	4,5	4,5	6,1	6,1	6,1	8,4	12,1	12,1	12,1
Max. current	A	8,0	8,0	11,2	11,2	11,2	15,2	19,4	19,4	19,4

LRA	A	98	98	131	131	131	169	136	136	136
High head pump model	-	NB65-125/127	NB65-125/137	NB65-125/137	NB65-125/137	NB65-125/144	NB65-125/144	NB65-160/173	NB80-160/151	NB80-160/151
Nominal power	kW	5,5	7,5	7,5	7,5	11,0	11,0	15,0	15,0	15,0
Motor power	kW	6,1	8,4	8,4	8,4	12,1	12,1	16,4	16,4	16,4
Max. current	A	11,2	15,2	15,2	15,2	19,4	19,4	26,3	26,3	26,3
LRA	A	131	169	169	169	136	136	184	184	184
Inverter pump model	-	NBE65-125/127	NBE65-125/137	NBE65-125/137	NBE65-125/137	NBE65-125/144	NBE65-125/144	NBE65-160/173	NBE80-160/151	NBE80-160/151
Nominal power	kW	5,5	7,5	7,5	7,5	11,0	11,0	15,0	15,0	15,0
Motor power	kW	6,5	8,6	8,6	8,6	12,4	12,4	17,7	17,5	17,5
Max. current	A	10,5	13,4	13,4	13,4	19,3	19,3	26,6	28,0	28,0

(1) At nominal conditions: water inlet/outet temperatures 29/20°C, outdoor air temperature 35°C
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

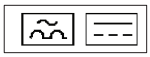


Table 10.23 – Electrical Data - FIZ*HG0 Models**

Models FIZ***HG0		065	075	080	085	095	110	125	140	150
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz								
Operating (1)										
Total power input (2)	kW	160	186	192	214	238	281	316	348	388
OA (without PFC) (2)	A	260	302	321	352	386	465	517	571	642
cosφ (without PFC) (2)	-	0,89	0,89	0,87	0,88	0,89	0,87	0,88	0,88	0,87
Rated power										
FLI	A	469	539	533	679	719	809	858	991	1035
Max. power input	kW	265	304	291	347	371	438	465	529	553
FLA	A	422	489	474	557	591	704	746	854	896
cosφ (without PFC)		0,91	0,90	0,88	0,90	0,91	0,90	0,90	0,89	0,89
LRA	A	69	69	956	795	834	1028	1101	1333	1455
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/ Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x300 mm²	2x500 mm²	2x500 mm²
Control										
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz								
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2	2
Compressors										
Power input	kW	128	154	154	176	193	236	265	290	324
Nominal current	A	211	253	262	293	317	396	439	483	544
Single compressor 1 - FLA	A	374	440	232	300	300	374	374	440	440
Single compressor 1 - FLI	A	420	490	260	340	340	420	420	490	490
Single compressor 1 - LRA - Method starting	A	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.
Single compressor 2 - FLA	A			183	198	222	262	295	326	358
Single compressor 2 - FLI	A			214	280	310	320	360	413	447
Single compressor 2 - LRA - Method starting	A			665 - PW	436 - YD	465 - YD	586 - YD	650 - YD	805 - YD	917 - YD
Fans										
Fans number	-	10	10	12	12	14	14	16	18	20
Power input (2)	kW	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2
Nominal current (2)	A	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9	4,9
Max. Current (2)	A	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,8	4,8

Pumps										
Std. head pump model	-	NB65-125/127	NB65-125/137	NB65-125/137	NB65-125/144	NB65-160/157	NB65-160/157	NB80-160/151	NB80-160/161	NB80-160/161
Nominal power	kW	5,5	7,5	7,5	11,0	11,0	11,0	15,0	18,5	18,5
Motor power	kW	6,1	8,4	8,4	12,1	12,1	12,1	16,4	20,1	20,1
Max. current	A	11,2	15,2	15,2	19,4	19,4	19,4	26,3	31,5	31,5
LRA	A	131	169	169	136	136	136	184	221	221
High head pump model	-	NB65-125/144	NB65-160/157	NB65-160/157	NB65-160/173	NB65-160/173	NB65-160/177	NB80-160/167	NB80-160/167	NB80-160/167
Nominal power	kW	11,0	11,0	11,0	15,0	15,0	18,5	22,0	22,0	22,0
Motor power	kW	12,1	12,1	12,1	16,4	16,4	20,0	23,4	23,4	23,4
Max. current	A	19,4	19,4	19,4	26,3	26,3	31,5	38,0	38,0	38,0
LRA	A	136	136	136	184	184	221	274	274	274
Inverter pump model	-	NBE65-125/144	NBE65-160/157	NBE65-160/157	NBE65-160/173	NBE65-160/173	NBE65-160/177	NBE80-160/167	NBE80-160/167	NBE80-160/167
Nominal power	kW	11,0	11,0	11,0	15,0	15,0	18,5	22,0	22,0	22,0
Motor power	kW	12,4	12,4	12,4	21,4	17,7	21,4	25,2	25,2	25,2
Max. current	A	19,3	19,3	19,3	26,6	26,6	32,3	39,9	39,9	39,9

(1) At nominal conditions: 30% eth.glycol inlet/outet temperatures 29/20°C, outdoor air temperature 35°C
(2) Base EC fans versions
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

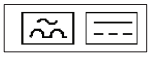


Table 10.24 – Electrical Data - FIZ*HG0 Low Noise Models**

Models FIZ***HG0L		065	075	080	085	095	110	125	140	150
Power supply	V/Ph/Hz	400V / 3Ph + PE / 50Hz								
Operating (1)										
Total power input	kW	154	182	182	208	227	279	312	339	379
OA (without PFC)	A	250	296	305	343	369	461	511	559	628
cosφ (without PFC)	-	0,89	0,89	0,86	0,88	0,89	0,87	0,88	0,87	0,87
Rated power										
FLI	A	472	542	536	682	723	813	863	997	1041
Max. power input	kW	267	306	293	350	374	440	468	533	557
FLA	A	425	492	477	560	595	708	751	860	902
cosφ (without PFC)		0,91	0,90	0,89	0,90	0,91	0,90	0,90	0,89	0,89
LRA	A	72	72	959	798	838	1032	1106	1339	1461
Max. fuse (gG/aM)	A	800gG/	800gG/	800gG/	800gG/	800gG/	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM	1250gG/ 1250aM
Ring terminals with hole/Line screw fixing	mm/Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm	M12 / 50-75Nm
QSA Minimun Cable section recommended (3)	mm²	2x185 mm²	2x185 mm²	2x185 mm²	2x240 mm²	2x240 mm²	2x300 mm²	2x300 mm²	2x500 mm²	2x500 mm²
Control										
Control power supply (only for option Fast-Start)	V/Ph/Hz	230V / 1Ph + N + PE / 50Hz								
Pmax	kW	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59	0,59
Imax	A	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30
LRA	A	7	7	7	7	7	7	7	7	7
Cable section min./max.	mm²	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35	1,5/35
Max. fuse (gG/aM)	A	40	40	40	40	40	40	40	40	40
Line screw fixing	Nm	2	2	2	2	2	2	2	2	2
Compressors										
Power input	kW	142	170	167	194	210	262	293	317	355
Nominal current	A	231	277	282	320	342	434	481	525	590
Single compressor 1 - FLA	A	374	440	232	304	304	374	374	440	440
Single compressor 1 - FLI	A	420	490	260	340	340	420	420	490	490
Single compressor 1 - LRA - Method starting	A	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.	20 - Inv.
Single compressor 2 - FLA	A			183	198	222	262	295	326	358

Single compressor 2 - FLI	A			214	280	310	320	360	413	447
Single compressor 2 - LRA - Method starting	A			665 - PW	436 - YD	465 - YD	586 - YD	650 - YD	805 - YD	917 - YD
Fans										
Fans number	-	10	10	12	12	14	14	16	18	20
Power input	kW	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Nominal current	A	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9
Max. Current	A	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2	5,2
Pumps										
Std. head pump model	-	NB65-125/127	NB65-125/137	NB65-125/137	NB65-125/144	NB65-160/157	NB65-160/157	NB80-160/151	NB80-160/161	NB80-160/161
Nominal power	kW	5,5	7,5	7,5	11,0	11,0	11,0	15,0	18,5	18,5
Motor power	kW	6,1	8,4	8,4	12,1	12,1	12,1	16,4	20,1	20,1
Max. current	A	11,2	15,2	15,2	19,4	19,4	19,4	26,3	31,5	31,5
LRA	A	131	169	169	136	136	136	184	221	221
High head pump model	-	NB65-125/144	NB65-160/157	NB65-160/157	NB65-160/173	NB65-160/173	NB65-160/177	NB80-160/167	NB80-160/167	NB80-160/167
Nominal power	kW	11,0	11,0	11,0	15,0	15,0	18,5	22,0	22,0	22,0
Motor power	kW	12,1	12,1	12,1	16,4	16,4	20,0	23,4	23,4	23,4
Max. current	A	19,4	19,4	19,4	26,3	26,3	31,5	38,0	38,0	38,0
LRA	A	136	136	136	184	184	221	274	274	274
Inverter pump model	-	NBE65-125/144	NBE65-160/157	NBE65-160/157	NBE65-160/173	NBE65-160/173	NBE65-160/177	NBE80-160/167	NBE80-160/167	NBE80-160/167
Nominal power	kW	11,0	11,0	11,0	15,0	15,0	18,5	22,0	22,0	22,0
Motor power	kW	12,4	12,4	12,4	21,4	17,7	21,4	25,2	25,2	25,2
Max. current	A	19,3	19,3	19,3	26,6	26,6	32,3	39,9	39,9	39,9

(1) At nominal conditions: 30% eth.glycol inlet/outet temperatures 29/20°C, outdoor air temperature 35°C
(3) PVC cable 40°C see tab.6 EN60204-1 B1 - line SCPD must be coordinated with the line section OA, FLA, LRA are calculated for unit without pumps.
For R513A consider an approximate increase of 3-6% on operating current and power input. For detailed data please refer to Vertiv™ CRS selection software.
If the unit with EC-FAN or inverter pump is connected to an electric installation where an earthleakage circuit breaker (ELCB) is used as additional protection, the circuit breaker must be of a type marked with the following symbols (This circuit breaker is type B.):

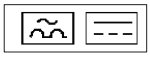
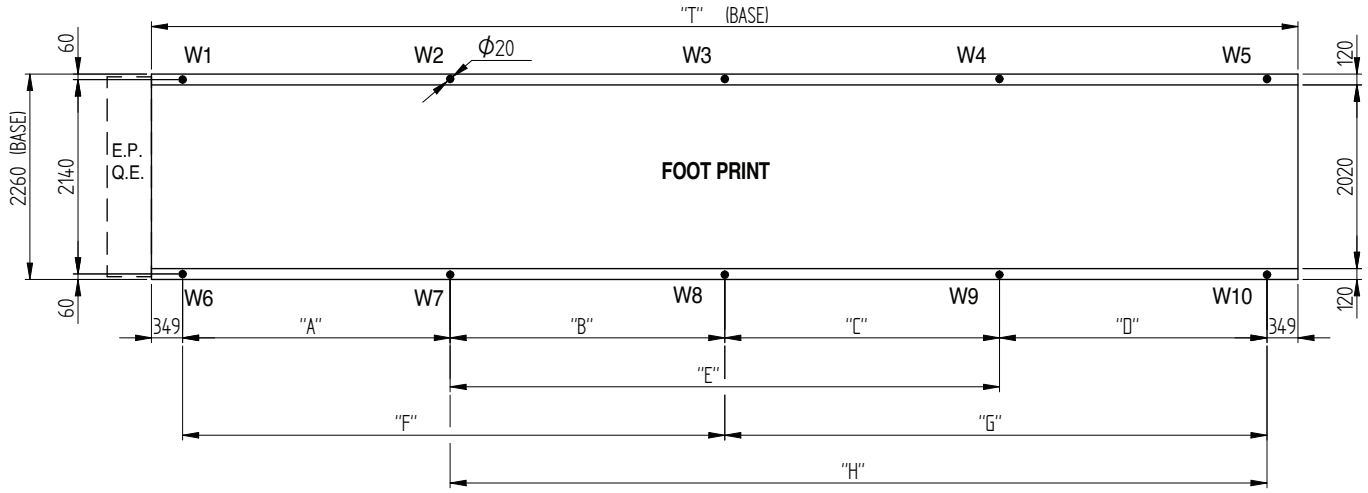


Fig. 11.1 - Support positions and loads



Tab. 11.1 - Dimensions

CH4 - FH4 - NH4	065-075	080-090	100-110	125-140	165	180-195
CIZ - FIZ - NIZ	065-075	080-085	95-110	125	140	150
N° Fans	10	12	14	16	18	20
N° Antivibration	6	6	8	8	10	10
"A" (mm)	2286	3556	2286	3556	2286	2286
"B" (mm)	-	-	3810	3810	2540	2540
"C" (mm)	-	-	-	-	3810	3810
"D" (mm)	-	-	-	-	2286	2286
"E" (mm)	-	-	-	-	6350	6350
"F" (mm)	-	-	6096	7366	4826	4826
"G" (mm)	-	-	2286	2286	6096	7366
"H" (mm)	3556	3556	6096	6096	8636	9906
"T" (mm)	6540	7810	9080	10350	11620	12890

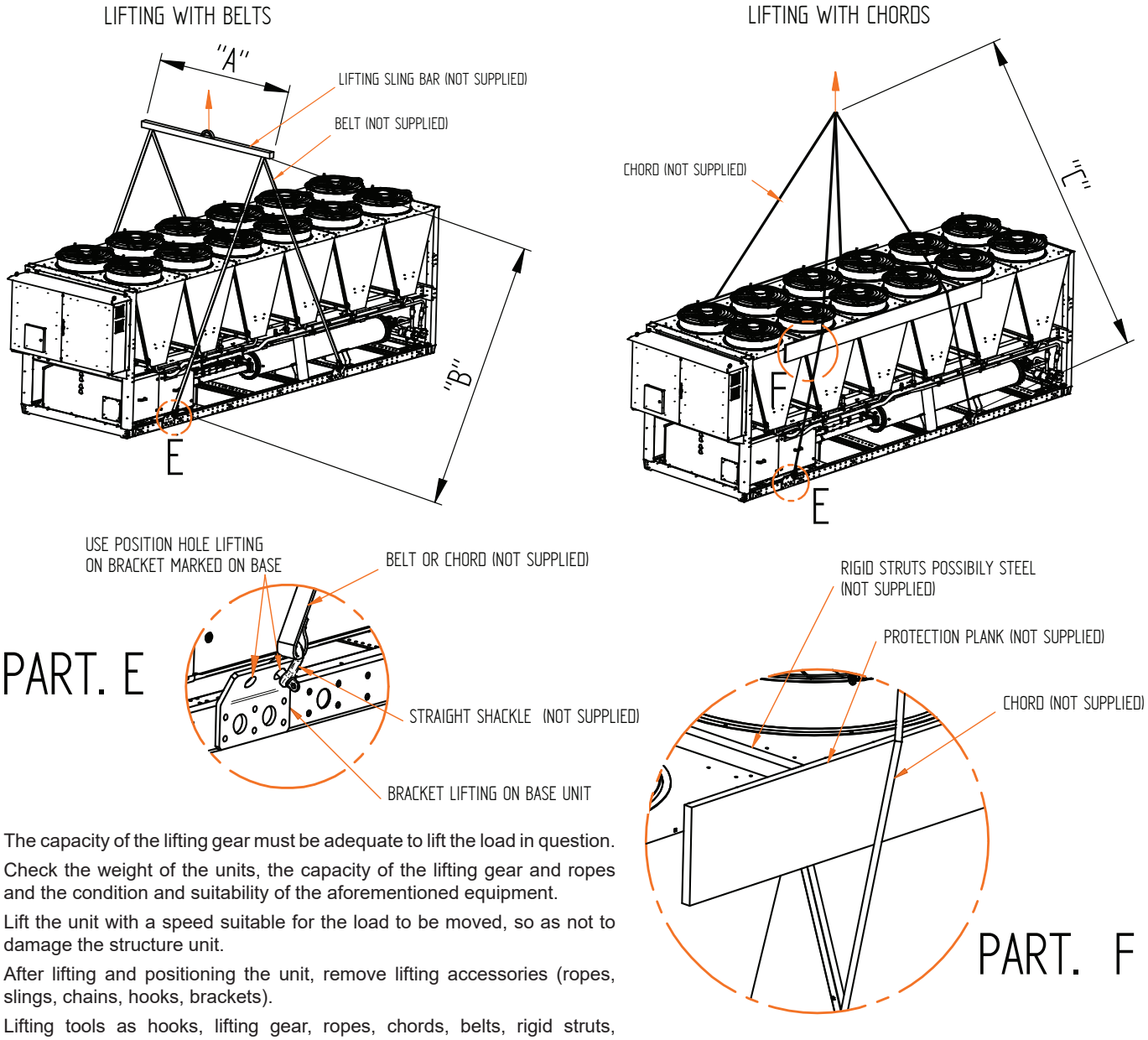
Tab 11.2 - *H4/*H3 Operating weight distribution (Unit without user pump)

Models	Weight distribution (kg)										Total weight (kg)
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	
CH4/CH3 065	913	1590	--	--	362	1177	2050	--	--	467	6556
CH4/CH3 075	916	1597	--	--	363	1184	2063	--	--	469	6588
CH4/CH3 080	1102	1813	--	--	215	1408	2317	--	--	274	7130
CH4/CH3 090	1110	1825	--	--	213	1420	2335	--	--	272	7181
CH4/CH3 100	805	1856	996	--	291	1135	2615	1404	--	410	9512
CH4/CH3 110	882	1992	1017	--	298	1218	2748	1403	--	412	9971
CH4/CH3 125	1353	2067	782	--	246	1847	2823	1068	--	336	10517
CH4/CH3 140	1390	2117	790	--	248	1900	2893	1080	--	338	10752
CH4/CH3 165	984	1749	1172	967	146	1367	2432	1629	1344	202	11993
CH4/CH3 180	1073	1903	951	1074	347	1476	2617	1308	1476	477	12698
CH4/CH3 195	1072	1900	959	1072	346	1478	2620	1321	1478	477	12723
FH4/FH3 065	1142	2250	--	--	615	1218	2400	--	--	655	8275
FH4/FH3 075	1146	2258	--	--	614	1224	2412	--	--	656	8307
FH4/FH3 080	1438	2597	--	--	445	1502	2713	--	--	465	9159
FH4/FH3 090	1447	2610	--	--	443	1513	2730	--	--	463	9210
FH4/FH3 100	1034	2564	1606	--	459	1177	2918	1826	--	522	12106
FH4/FH3 110	1114	2706	1621	--	465	1257	3054	1830	--	525	12565
FH4/FH3 125	1667	2970	1464	--	265	1853	3300	1626	--	295	13437
FH4/FH3 140	1704	3012	1468	--	268	1907	3370	1643	--	300	13672
FH4/FH3 165	1294	2329	1696	1540	305	1446	2601	1894	1720	341	15171
FH4/FH3 180	1323	2408	1723	1732	528	1457	2652	1898	1908	582	16191
FH4/FH3 195	1322	2405	1725	1730	528	1459	2655	1905	1910	582	16214
NH4/NH3 065	1107	2319	--	--	677	1233	2581	--	--	753	8664
NH4/NH3 075	1111	2326	--	--	676	1239	2594	--	--	754	8696
NH4/NH3 080	1440	2768	--	--	564	1520	2922	--	--	596	9816
NH4/NH3 090	1454	2781	--	--	564	1536	2939	--	--	596	9867
NH4/NH3 100	1021	2665	1823	--	517	1171	3057	2090	--	594	12938
NH4/NH3 110	1100	2804	1840	--	524	1252	3188	2092	--	598	13398
NH4/NH3 125	1683	3143	1654	--	260	1888	3528	1857	--	291	14300
NH4/NH3 140	1724	3188	1653	--	261	1947	3602	1868	--	295	14535
NH4/NH3 165	1282	2368	2321	1761	224	1398	2582	2530	1919	245	16621
NH4/NH3 180	1336	2487	2376	1926	471	1425	2654	2535	2055	502	17774
NH4/NH3 195	1334	2490	2383	1928	471	1426	2661	2547	2062	502	17798

Tab 11.3 - *IZ Operating weight distribution (Unit without user pump)

Models	Weight distribution (kg)										Total weight (kg)
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	
CIZ 065	717	1460	--	--	412	913	1860	--	--	525	5892
CIZ 075	721	1465	--	--	412	919	1865	--	--	525	5902
CIZ 080	1055	1774	--	--	232	1365	2296	--	--	300	7029
CIZ 085	870	1985	--	--	431	1150	2625	--	--	569	7629
CIZ 095	797	1848	1008	--	295	1094	2534	1384	--	404	9364
CIZ 110	873	1967	1002	--	294	1227	2763	1408	--	412	9940
CIZ 125	1339	2045	774	--	243	1862	2844	1076	--	339	10518
CIZ 140	967	1721	1168	963	146	1343	2390	1622	1337	203	11860
CIZ 150	1027	1823	956	1074	347	1413	2507	1314	1476	477	12409
FIZ 065	937	2124	--	--	672	973	2206	--	--	698	7612
FIZ 075	937	2129	--	--	672	973	2211	--	--	698	7622
FIZ 080	1398	2576	--	--	470	1462	2694	--	--	492	9098
FIZ 085	1425	2706	--	--	539	1535	2914	--	--	581	9697
FIZ 095	1023	2557	1619	--	462	1138	2844	1801	--	514	11958
FIZ 110	1106	2683	1601	--	460	1264	3067	1829	--	525	12535
FIZ 125	1655	2948	1458	--	263	1865	3322	1642	--	297	13438
FIZ 140	1277	2300	1690	1537	307	1423	2561	1882	1713	341	15037
FIZ 150	1221	2332	1779	1726	530	1339	2558	1951	1894	581	15901
NIZ 065	899	2191	--	--	737	981	2389	--	--	803	8000
NIZ 075	904	2192	--	--	737	986	2388	--	--	803	8010
NIZ 080	1392	2725	--	--	582	1478	2895	--	--	618	9699
NIZ 085	1420	2854	--	--	650	1550	3116	--	--	710	10299
NIZ 095	1008	2657	1842	--	519	1132	2983	2068	--	582	12791
NIZ 110	1092	2785	1822	--	516	1258	3205	2098	--	594	13367
NIZ 125	1675	3131	1652	--	257	1905	3560	1878	--	293	14350
NIZ 140	1213	2344	2329	1735	231	1318	2548	2531	1886	251	16388
NIZ 150	1229	2394	2370	1896	474	1311	2555	2530	2024	506	17285

Fig. 11.2 - Lifting instructions with 4 brackets (10- 12 fans)



The capacity of the lifting gear must be adequate to lift the load in question.

Check the weight of the units, the capacity of the lifting gear and ropes and the condition and suitability of the aforementioned equipment.

Lift the unit with a speed suitable for the load to be moved, so as not to damage the structure unit.

After lifting and positioning the unit, remove lifting accessories (ropes, slings, chains, hooks, brackets).

Lifting tools as hooks, lifting gear, ropes, chords, belts, rigid struts, protection plank are not provided with the unit.

Models	Fans n.	A (mm)	B (mm)	C (mm)
FIZ/NIZ/CIZ 065-075 FH4/NH4/CH4 065-075	10	~2800	~5000	~10000
FIZ/NIZ/CIZ 080-085 FH4/NH4/CH4 080-090	12	~2800	~5000	~10000

1. Insert a sling in each of the iron beams.
2. Use a crane to move the unit.

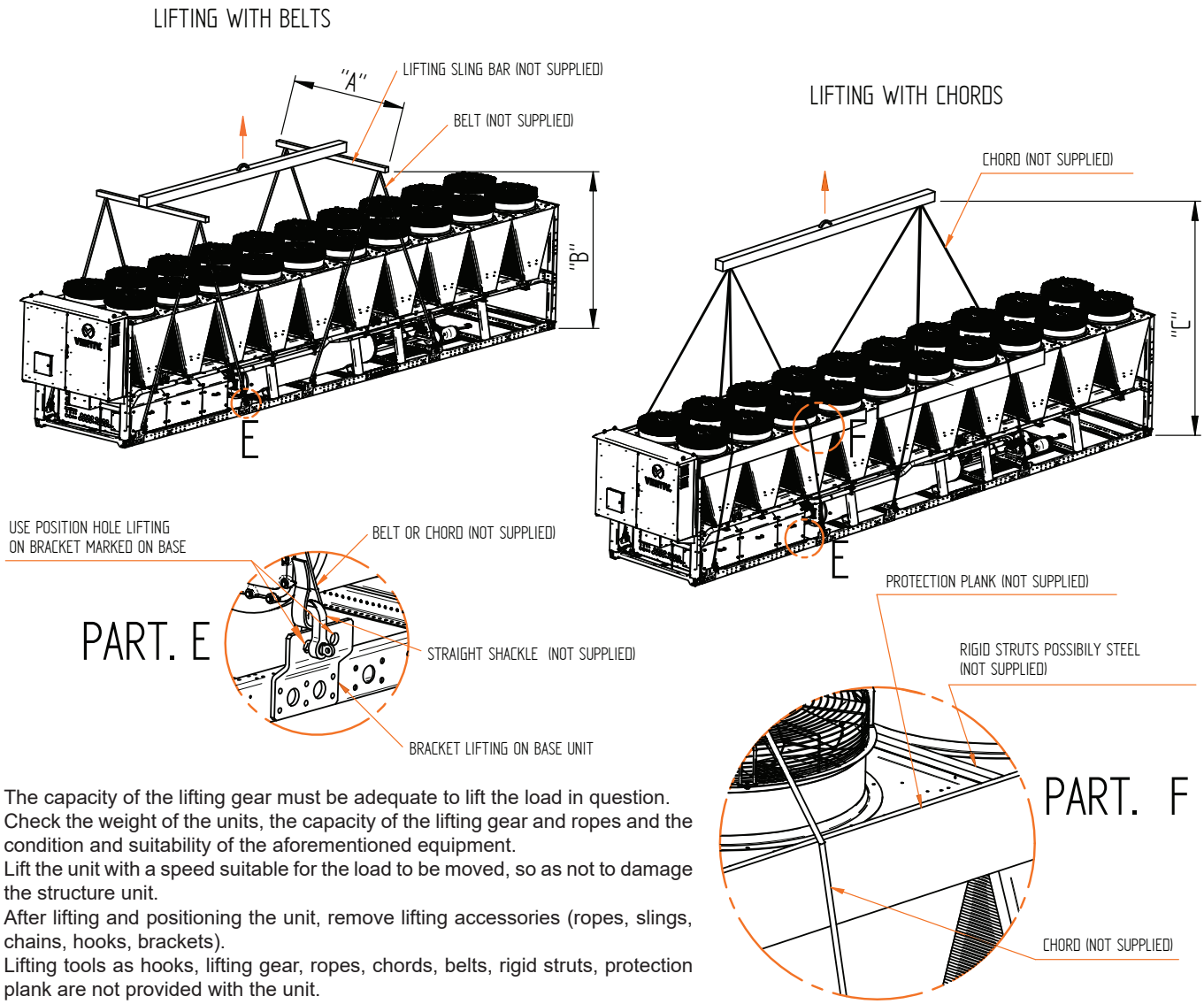
NOTICE

Do not use a forklift to move the unit. The structure does not support heavy loads and would be damaged.

NOTICE

Lift the unit with a speed suitable for the load to be moved, so as not to damage the structure.

Fig. 11.3 - Lifting instructions with 8 brackets (14- 16- 18- 20 fans)



The capacity of the lifting gear must be adequate to lift the load in question.
Check the weight of the units, the capacity of the lifting gear and ropes and the condition and suitability of the aforementioned equipment.
Lift the unit with a speed suitable for the load to be moved, so as not to damage the structure unit.
After lifting and positioning the unit, remove lifting accessories (ropes, slings, chains, hooks, brackets).
Lifting tools as hooks, lifting gear, ropes, chords, belts, rigid struts, protection plank are not provided with the unit.

Models (* = 4 x R134a, 3 x R513A)	Fans n.	A (mm)	B (mm)	C (mm)
FIZ/NIZ/CIZ 095-110 FH*/NH*/CH* 100-110	14	~2800	~5000	~10000
FIZ/NIZ/CIZ 125 FH*/NH*/CH* 125-140	16	~2800	~5000	~10000
FIZ/NIZ/CIZ 140 FH*/NH*/CH* 165	18	~2800	~5000	~10000
FIZ/NIZ/CIZ 150 FH*/NH*/CH* 180-195	20	~2800	~5000	~10000

1. Insert a sling in each of the iron beams.
2. Use a crane to move the unit.

NOTICE
Do not use a forklift to move the unit. The structure does not support heavy loads and would be damaged.

NOTICE
Lift the unit with a speed suitable for the load to be moved, so as not to damage the structure.

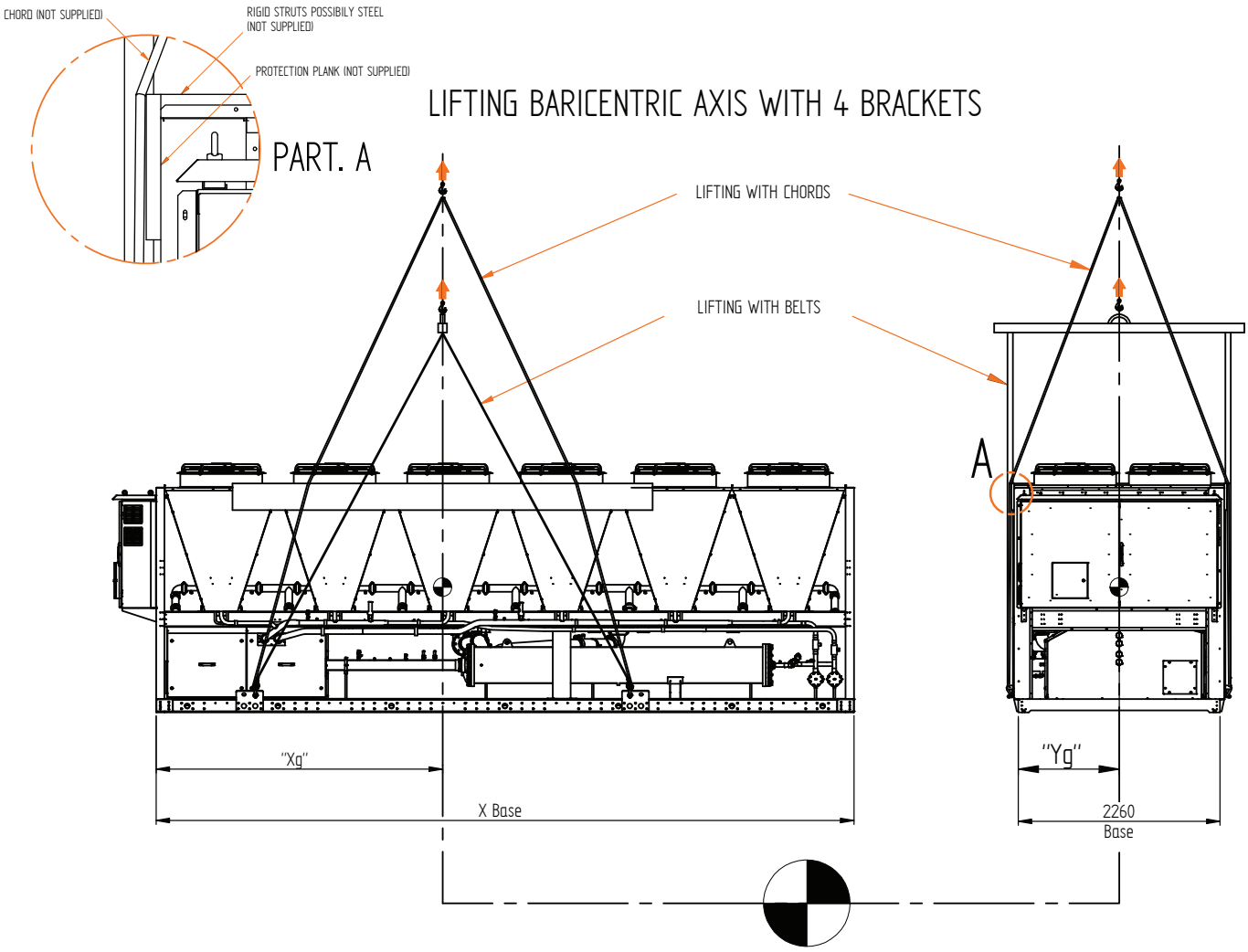
Fig. 11.4 - Lifting barycentric axis with 4 brackets

- If the unit is shipped with a container, for extraction, follow the instructions on the front panel;
- Move the unit by lifting it from above with a crane;
- The holes for lifting are positioned on special yellow brackets fixed to the base frame (when lifting, use spreader bars to protect the side.

The lifting capacity of the lifting parts must be adequate for the load to be lifted. Check the weight of the units, the capacity of the sling bar and the ropes, the validity and the conditions of the aforementioned equipment.

Do not tilt the unit more than 15°.

No force or effort must be applied to pressurized parts, especially via pipes connected to the condensers or to the evaporator



N.B: The lifting point has to be on the vertical baricentric axis, which is individualized by symbols indicated on the base.

Do not tilt the unit more than 15°

No force must be applied to pressurized parts, especially pipes connected to the condensers or to evaporator

WARNING

The lifting point must be aligned with the gravity center

- Make reference to *12 - Dimensional Data* for dimensions, weight and gravity center position.
- If the unit is still packaged, pay attention to the gravity center and warning labels placed on the unit.

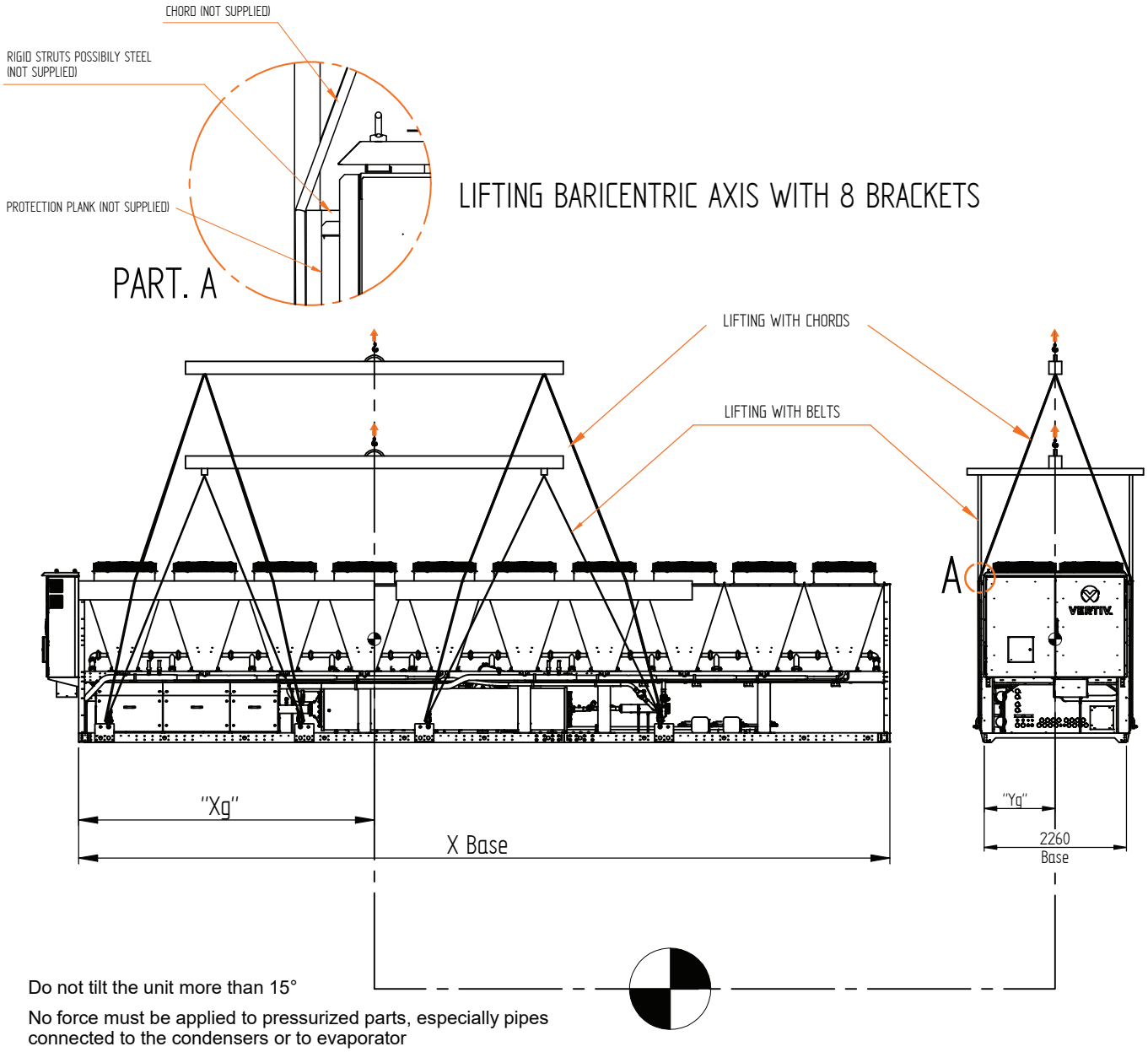
Fig. 11.5 - Lifting barycentric axis with 8 brackets

- If the unit is shipped with a container, for extraction, follow the instructions on the front panel;
- Move the unit by lifting it from above with a crane;
- The holes for lifting are positioned on special yellow brackets fixed to the base frame (when lifting, use spreader bars to protect the side.

The lifting capacity of the lifting parts must be adequate for the load to be lifted. Check the weight of the units, the capacity of the sling bar and the ropes, the validity and the conditions of the aforementioned equipment.

Do not tilt the unit more than 15°.

No force or effort must be applied to pressurized parts, especially via pipes connected to the condensers or to the evaporator



N.B: The lifting point has to be on the vertical baricentric axis, which is individualized by symbols indicated on the base.

WARNING

The lifting point must be aligned with the gravity center

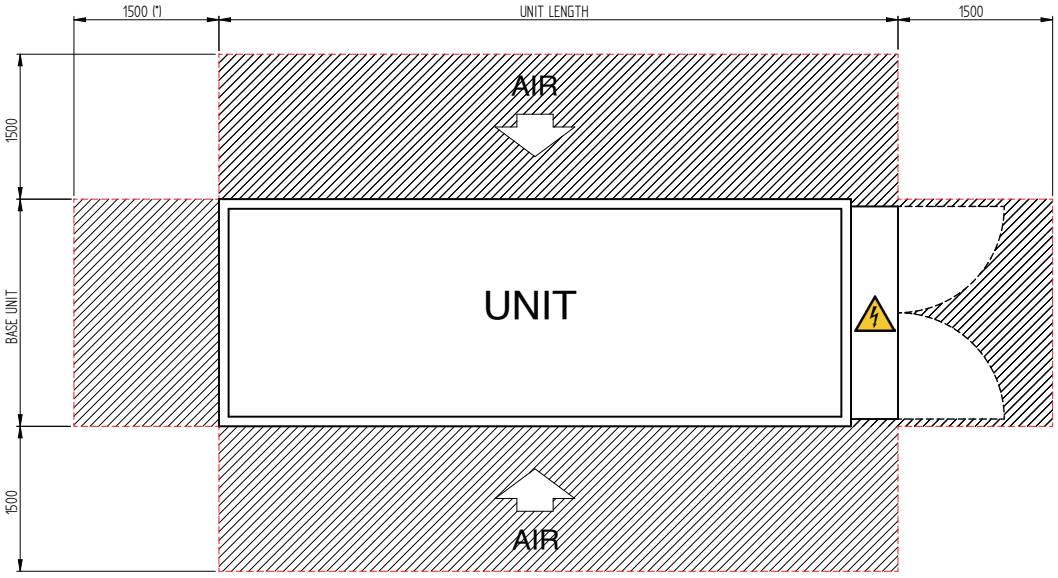
- Make reference to *12 - Dimensional Data* for dimensions, weight and gravity center position.
- If the unit is still packaged, pay attention to the gravity center and warning labels placed on the unit.

Unit without pumps				
Models	**X Base (mm)**	**Xg (mm)**	**Yg (mm)**	**Weight (kg)**
Chiller models				
CH4 065	6540	2269	1238	6202
CH4 075	6540	2268	1239	6234
CH4 080	7810	2786	1238	6796
CH4 090	7810	2779	1238	6847
CH4 100	9080	3345	1235	8604
CH4 110	9080	3275	1253	9035
CH4 125	10350	3638	1250	9582
CH4 140	10350	3610	1251	9774
CH4 165	11620	4100	1266	10914
CH4 180	12890	4432	1266	11651
CH4 195	12890	4440	1267	11724
CIZ 065	6540	2481	1228	5538
CIZ 075	6540	2479	1228	5548
CIZ 080	7810	2838	1244	6695
CIZ 085	7810	2953	1258	7295
CIZ 095	9080	3364	1248	8456
CIZ 110	9080	3267	1263	9005
CIZ 125	10350	3636	1260	9567
CIZ 140	11620	4125	1266	10812
CIZ 150	12890	4505	1264	11393
Freecooling models				
FH4 065	6540	2428	1160	7507
FH4 075	6540	2429	1162	7540
FH4 080	7810	2990	1155	8332
FH4 090	7810	2993	1156	8384
FH4 100	9080	3570	1179	10550
FH4 110	9080	3503	1173	10980
FH4 125	10350	3913	1168	11770
FH4 140	10350	3790	1171	11963
FH4 165	11620	4387	1177	13280
FH4 180	12890	4770	1174	14247
FH4 195	12890	4775	1177	14320
FIZ 065	6540	2616	1145	6844
FIZ 075	6540	2614	1145	6854
FIZ 080	7810	3034	1160	8230
FIZ 085	7810	3116	1177	8830
FIZ 095	9080	3588	1165	10401
FIZ 110	9080	3498	1181	10950
FIZ 125	10350	3912	1176	11756
FIZ 140	11620	4410	1177	13178
FIZ 150	12890	4835	1173	13990
Freecooling glycol-free models				
NH4 065	6540	2494	1174	7708
NH4 075	6540	2492	1174	7740
NH4 080	7810	3111	1155	8742
NH4 090	7810	3014	1156	8793
NH4 100	9080	3689	1181	11035
NH4 110	9080	3620	1175	11466
NH4 125	10350	3982	1171	12231
NH4 140	10350	3955	1173	12423
NH4 165	11620	4465	1166	14134
NH4 180	12890	4787	1162	15154
NH4 195	12890	4792	1166	15226
NIZ 065	6540	2681	1159	7044
NIZ 075	6540	2679	1159	7054
NIZ 080	7810	3155	1159	8640
NIZ 085	7810	3225	1176	9240
NIZ 095	9080	3708	1167	10887
NIZ 110	9080	3615	1183	11435
NIZ 125	10350	3981	1178	12216
NIZ 140	11620	4474	1165	13933
NIZ 150	12890	4850	1153	14785

Fig. 11.6 - Service areas (top view)

To allow the free passage of air flow and the maintenance of the unit, it is necessary to leave a minimum area around the chiller free of obstructions.

- The hot air expelled by the fans must not find obstacles for a height of at least 2.5 m.
- Avoid hot air recirculation phenomena between suction and delivery, under penalty of loss of unit performance or even interruption of normal operation.



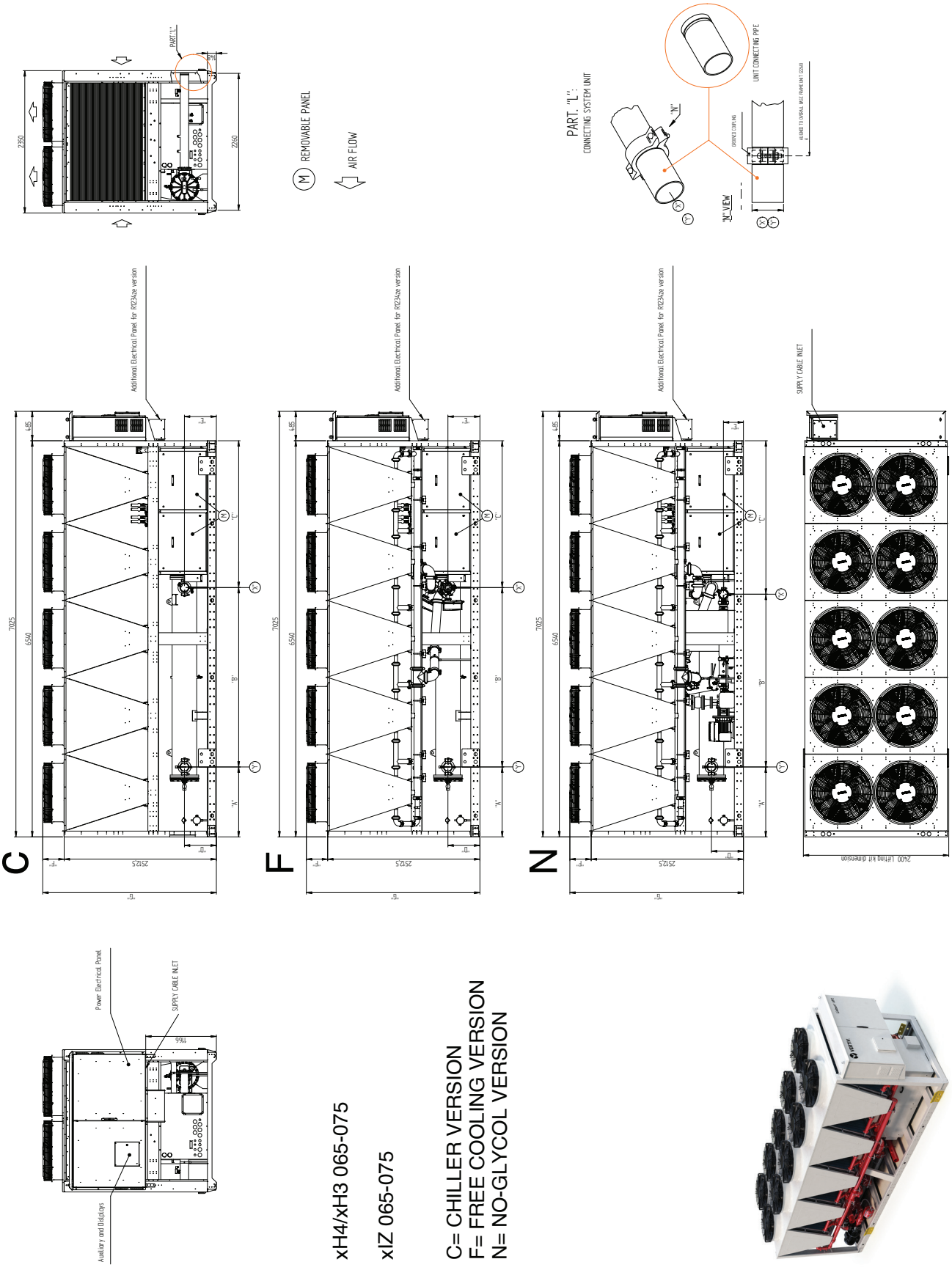
- See *chapter 12 - Dimensional Data* for the unit dimensions
- Keep a free space between the unit and any obstacle as shown in the figure.
- The unit has to be installed in a place that is not accessible to the public or protected against access by non-authorized persons.
- The unit environment must permit easy access for maintenance operations.

NOTICE
The maintenance of the unit become extremely difficult if placed too close to walls or other obstacles

NOTICE
The floor level in the maintenance area on the electrical panel side must be aligned with the surface where the unit is placed, ensuring easy and safe access to the electrical panel, complying with applicable safety regulations

12 Dimensional Data

Overall dimensions - 10 Fans Units



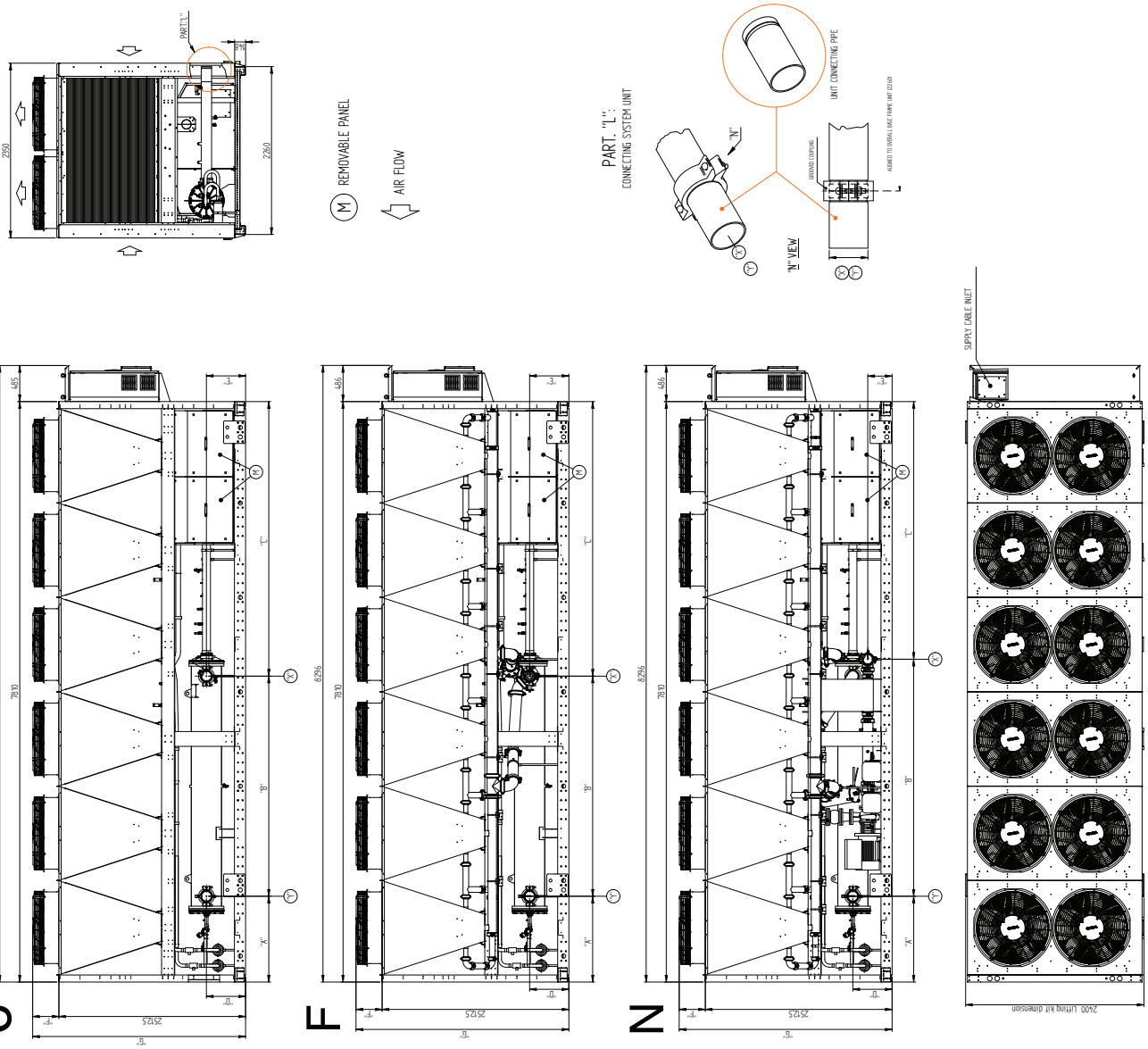
Model	Single Pump Version S ΔT=6°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Base Fans F (mm)	Base Fans G (mm)	Premium Fans F (mm)	Premium Fans G (mm)	Low Noise Fans F (mm)	Low Noise Fans G (mm)	Chilled water connections "X" (mm)		Chilled water connections 2962"Y" (mm)	
CIZ 065 CH4/CH3 065	With out Pumps	10	1154	2962	2424	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498,5	2617,5	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1498,5	2617,5	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1498,5	2617,5	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CIZ 075 CH4/CH3 075	With out Pumps	10	1154	2962	2424	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498,5	2617,5	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1517	2599	2424	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1517	2599	2424	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 065 FH4/FH3 065	With out Pumps	10	1154	2962	2424	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498,5	2617,5	2424	711	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1517	2599	2424	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1515	2601	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 075 FH4/FH3 075	With out Pumps	10	1154	2962	2424	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1517	2599	2424	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1517	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1517	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 065 NH4/NH3 065	With out Pumps	10	1154	2852	2534	527,5	329	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498,5	2507,5	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1517	2489	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1515	2491	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 075 NH4/NH3 075	With out Pumps	10	1154	2852	2534	527,5	329	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1517	2489	2534	714	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1517	2489	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1517	2489	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

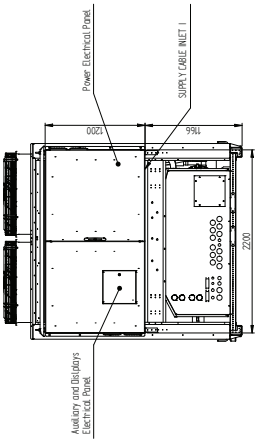
								Base Fans		Premium Fans		Low Noise Fans		Chilled water connections			
Model	Single Pump Version H ΔT=9°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	F (mm)	G (mm)	F (mm)	G (mm)	"X" (mm)		2962"Y" (mm)	
CIZ 065 CH4/CH3 065	With out Pumps	10	1154	2962	2424	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498	2617,5	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1498	2617,5	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1498	2617,5	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CIZ 075 CH4/CH3 075	With out Pumps	10	1154	2962	2424	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498	2617,5	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1498	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1498	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 065 FH4/FH3 065	With out Pumps	10	1154	2962	2424	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498	2617,5	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1516	2599	2424	702	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1516	2601	2424	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 075 FH4/FH3 075	With out Pumps	10	1154	2962	2424	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1516	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1515	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 065 NH4/NH3 065	With out Pumps	10	1154	2852	2534	527,5	329	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498	2507,5	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1498	2489	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1498	2491	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 075 NH4/NH3 075	With out Pumps	10	1154	2852	2534	527,5	329	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498	2489	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1516	2489	2534	714	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1516	2489	2534	714	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

Model	Double Pump Version S ΔT=6°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Base Fans F (mm)	Base Fans G (mm)	Premium Fans F (mm)	Premium Fans G (mm)	Low Noise Fans F (mm)	Low Noise Fans G (mm)	Chilled water connections "X" (mm)		Chilled water connections 2962"Y" (mm)	
CIZ 065 CH4/CH3 065	With 2 Pumps std low press.	10	1499	2617	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1498,5	2617,5	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1497,5	2618,5	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CIZ 075 CH4/CH3 075	With 2 Pumps std low press.	10	1499	2617	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1517	2599	2424	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1517	2599	2424	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 065 FH4/FH3 065	With 2 Pumps std low press.	10	1499	2617	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1517	2599	2424	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1515	2601	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 075 FH4/FH3 075	With 2 Pumps std low press.	10	1517	2599	2424	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1517	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1517	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 065 NH4/NH3 065	With 2 Pumps std low press.	10	1498,5	2507,5	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1517	2489	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1515	2491	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 075 NH4/NH3 075	With 2 Pumps std low press.	10	1517	2489	2534	713	329	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1517	2489	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1517	2489	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

								Base Fans		Premium Fans		Low Noise Fans		Chilled water connections			
Model	Double Pump Version H ΔT=9°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	F (mm)	G (mm)	F (mm)	G (mm)	"X" (mm)		2962"Y" (mm)	
CIZ 065 CH4/CH3 065	With 2 Pumps std low press.	10	1498	2617	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1498,0	2617,5	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1498,0	2618,5	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CIZ 075 CH4/CH3 075	With 2 Pumps std low press.	10	1498	2617	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1498	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1498	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 065 FH4/FH3 065	With 2 Pumps std low press.	10	1498	2617	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1516	2599	2424	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1516	2601	2424	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 075 FH4/FH3 075	With 2 Pumps std low press.	10	1498	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1516	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1515	2599	2424	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 065 NH4/NH3 065	With 2 Pumps std low press.	10	1498,0	2507,5	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1498	2489	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1499	2491	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 075 NH4/NH3 075	With 2 Pumps std low press.	10	1498	2489	2534	734	329	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1516	2489	2534	714	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1516	2489	2534	714	329	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

Overall dimensions - 12 Fans Units

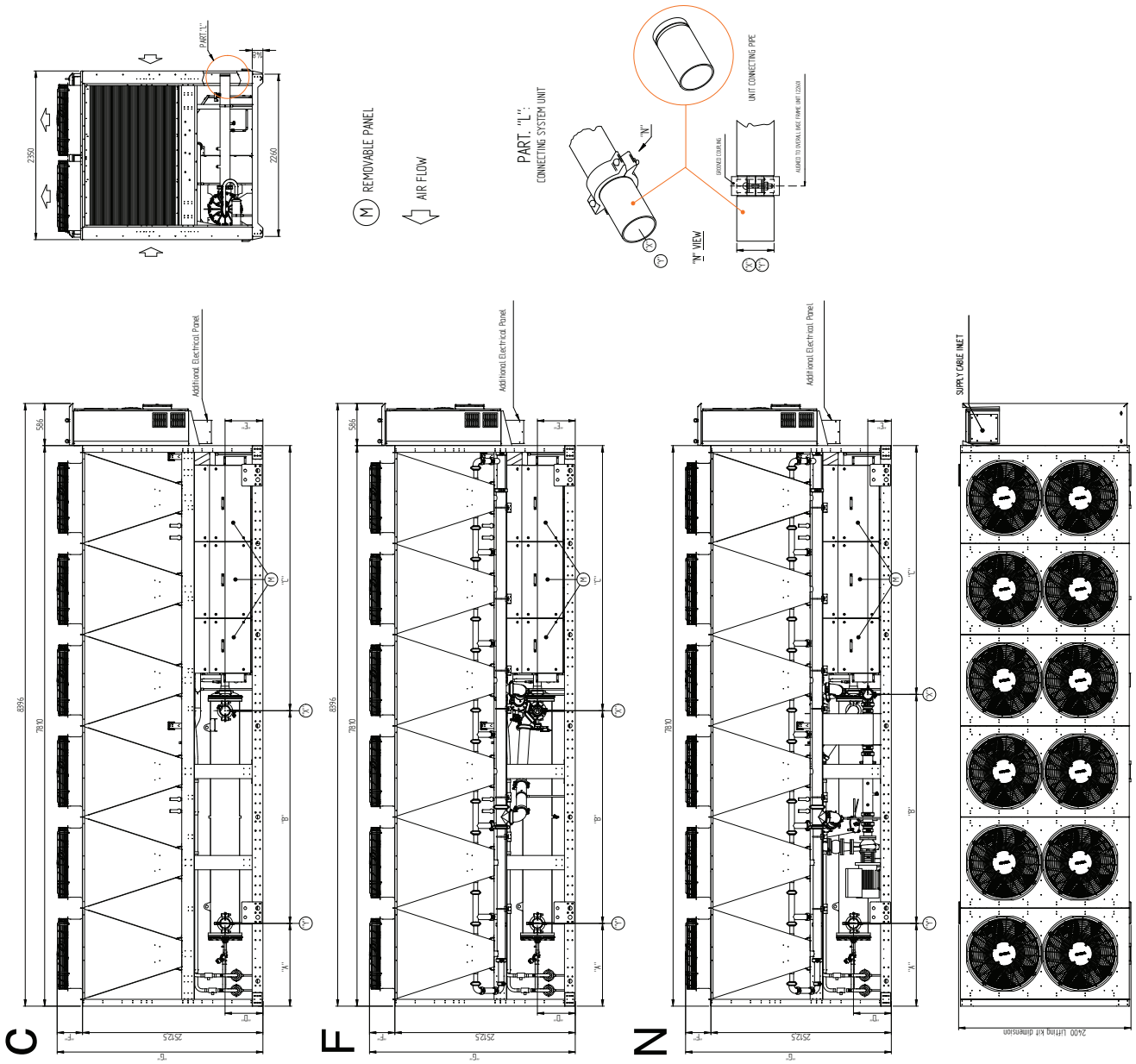


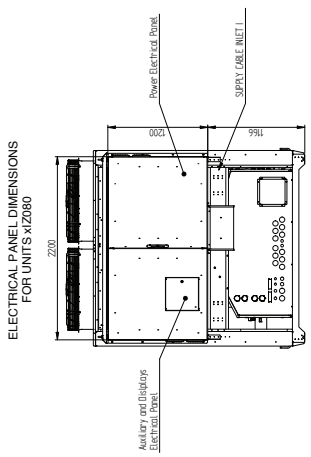


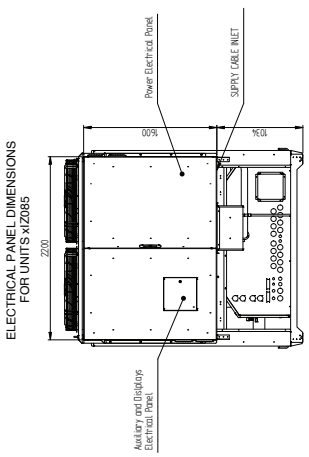
xH4/xH3 080-090

C= CHILLER VERSION
F= FREE COOLING VERSION
N= NO-GLYCOL VERSION

Overall dimensions - 12 Fans Units







xIZ 080-085

C= CHILLER VERSION
F= FREE COOLING VERSION
N= NO-GLYCOL VERSION

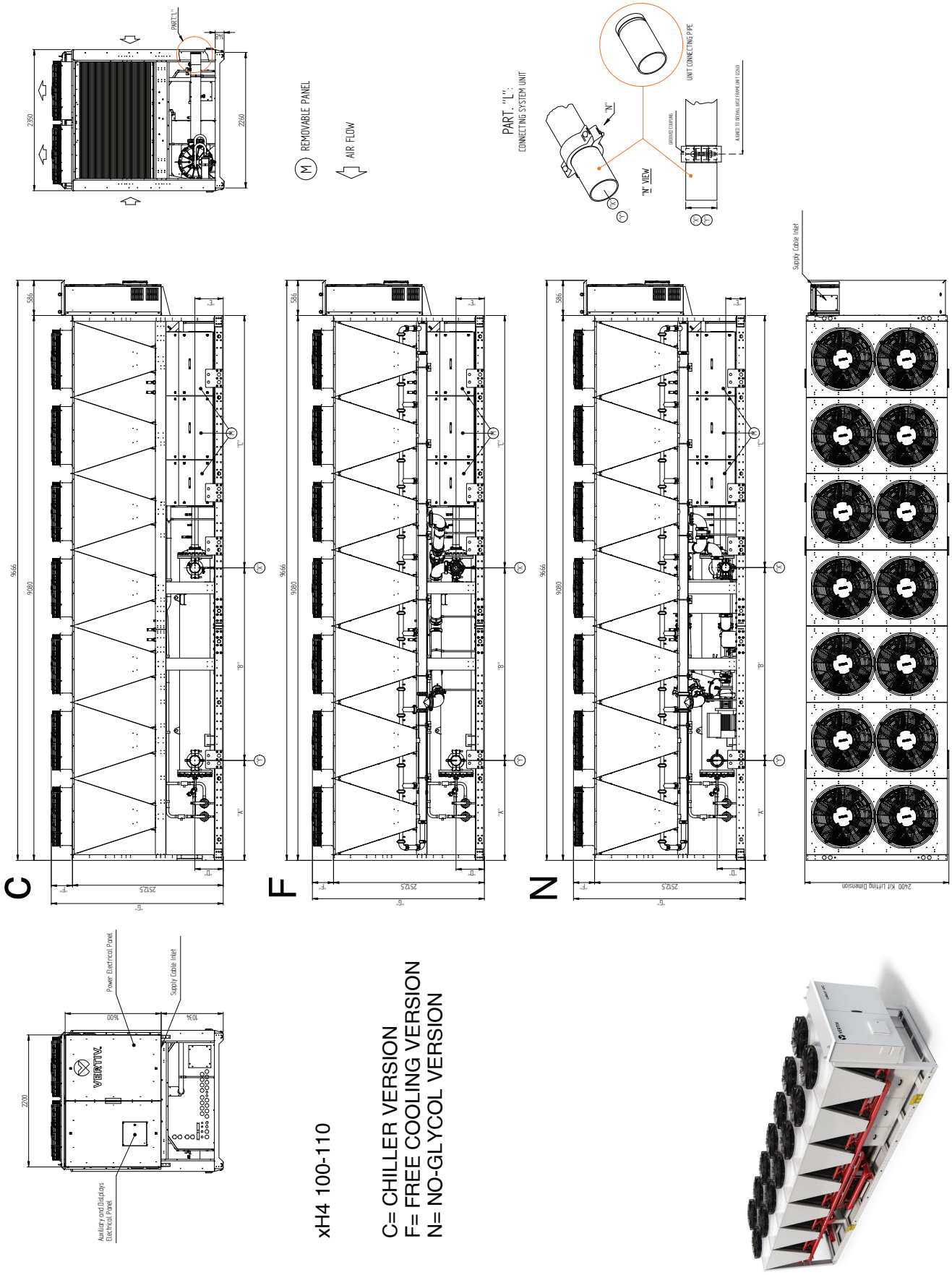
Model	Single Pump Version S ΔT=6°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Base Fans F (mm)	Base Fans G (mm)	Premium Fans F (mm)	Premium Fans G (mm)	Low Noise Fans F (mm)	Low Noise Fans G (mm)	Chilled water connections "X" (mm)		Chilled water connections 2962"Y" (mm)	
CIZ 080 CH4/CH3 080	With out Pumps	12	1154	2962	3694	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498,5	2617,5	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1517	2599	3694	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1517	2599	3694	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CIZ 085 CH4/CH3 090	With out Pumps	12	1154	2962	3694	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1517	2599	3694	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1517	2599	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1517	2599	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 080 FH4/FH3 080	With out Pumps	12	1154	2962	3694	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1516	2600	3694	713	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1516	2600	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1516	2600	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 085 FH4/FH3 090	With out Pumps	12	1154	2962	3694	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1516	2600	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1516	2600	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1516	2600	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 080 NH4/NH3 080	With out Pumps	12	1154	3189	3467	527,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1517	2826	3467	714	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1517	2826	3467	734	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1517	2826	3467	734	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 085 NH4/NH3 090	With out Pumps	12	1154	3189	3467	527,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1517	2826	3467	733	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1517	2826	3467	734	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1517	2826	3467	734	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

								Base Fans		Premium Fans		Low Noise Fans		Chilled water connections			
Model	Single Pump Version H ΔT=9°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	F (mm)	G (mm)	F (mm)	G (mm)	"X" (mm)		2962"Y" (mm)	
CIZ 080 CH4/CH3 080	With out Pumps	12	1154	2962	3694	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1499	2617,5	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1498	2599	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1498	2599	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CIZ 085 CH4/CH3 090	With out Pumps	12	1154	2962	3694	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1499	2599	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1498	2599	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1498	2599	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 080 FH4/FH3 080	With out Pumps	12	1154	2962	3694	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498	2600	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1516	2600	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1514	2600	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 085 FH4/FH3 090	With out Pumps	12	1154	2962	3694	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1516	2600	3694	713	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1516	2600	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1516	2600	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 080 NH4/NH3 080	With out Pumps	12	1154	3189	3467	527,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498	2826	3467	735	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1516	2826	3467	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1516	2826	3467	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 085 NH4/NH3 090	With out Pumps	12	1154	3189	3467	527,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With Pumps std low press.		1498	2826	3467	735	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1516	2826	3467	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1516	2826	3467	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

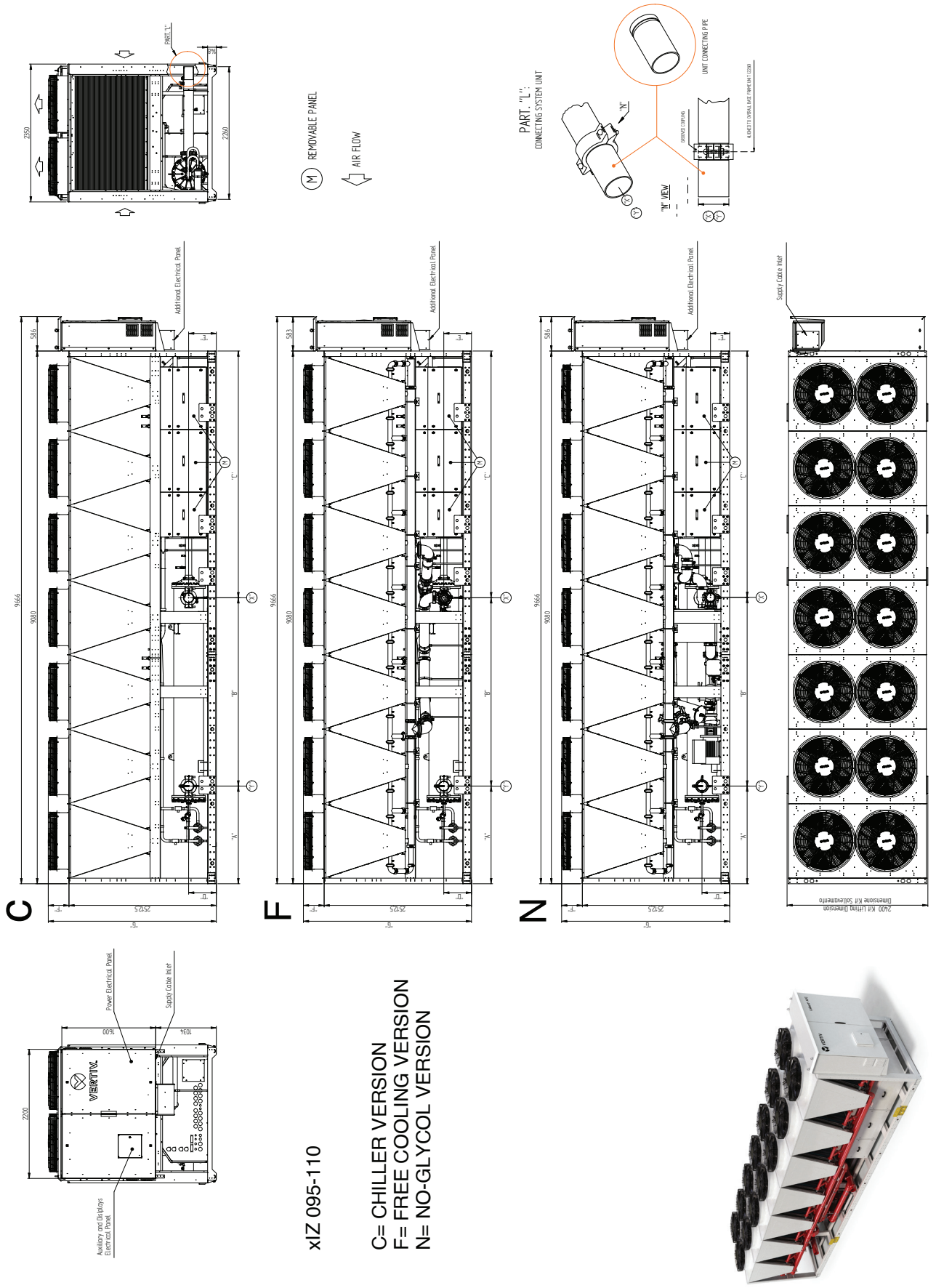
								Base Fans		Premium Fans		Low Noise Fans		Chilled water connections			
Model	Double Pump Version S ΔT=6°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	F (mm)	G (mm)	F (mm)	G (mm)	"X" (mm)		2962"Y" (mm)	
CIZ 080 CH4/CH3 080	With 2 Pumps std low press.	12	1498,5	2617,5	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1517	2599	3694	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1517	2599	3694	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CIZ 085 CH4/CH3 090	With 2 Pumps std low press.	12	1518	2598	3694	713	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1517	2599	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1517	2599	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 080 FH4/FH3 080	With 2 Pumps std low press.	12	1516	2600	3694	711	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1516	2600	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1516	2600	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 085 FH4/FH3 090	With 2 Pumps std low press.	12	1516	2600	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1516	2600	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1516	2600	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 080 NH4/NH3 080	With 2 Pumps std low press.	12	1517	2826	3467	714	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1517	2826	3467	734	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1517	2826	3467	733	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 085 NH4/NH3 090	With 2 Pumps std low press.	12	1517	2826	3467	733	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1517	2826	3467	734	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1516	2827	3467	733	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

								Base Fans		Premium Fans		Low Noise Fans		Chilled water connections			
Model	Double Pump Version H ΔT=9°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	F (mm)	G (mm)	F (mm)	G (mm)	"X" (mm)		2962"Y" (mm)	
CIZ 080 CH4/CH3 080	With 2 Pumps std low press.	12	1499	2617,5	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1498	2599	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1498	2599	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CIZ 085 CH4/CH3 090	With 2 Pumps std low press.	12	1499	2598	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1498	2599	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1498	2599	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 080 FH4/FH3 080	With 2 Pumps std low press.	12	1498	2600	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1516	2600	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1514	2600	3694	734	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 085 FH4/FH3 090	With 2 Pumps std low press.	12	1514	2600	3694	714	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1516	2600	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1516	2600	3694	733	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 080 NH4/NH3 080	With 2 Pumps std low press.	12	1499	2826	3467	735	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1516	2826	3467	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1516	2826	3467	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 085 NH4/NH3 090	With 2 Pumps std low press.	12	1499	2826	3467	735	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN125-5"-139,7	Outlet	Grooved pipes connections DN125-5"-139,7
	With 2 Pumps high press.		1516	2826	3467	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1516	2827	3467	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

Overall dimensions - 14 Fans Units



Overall dimensions - 14 Fans Units



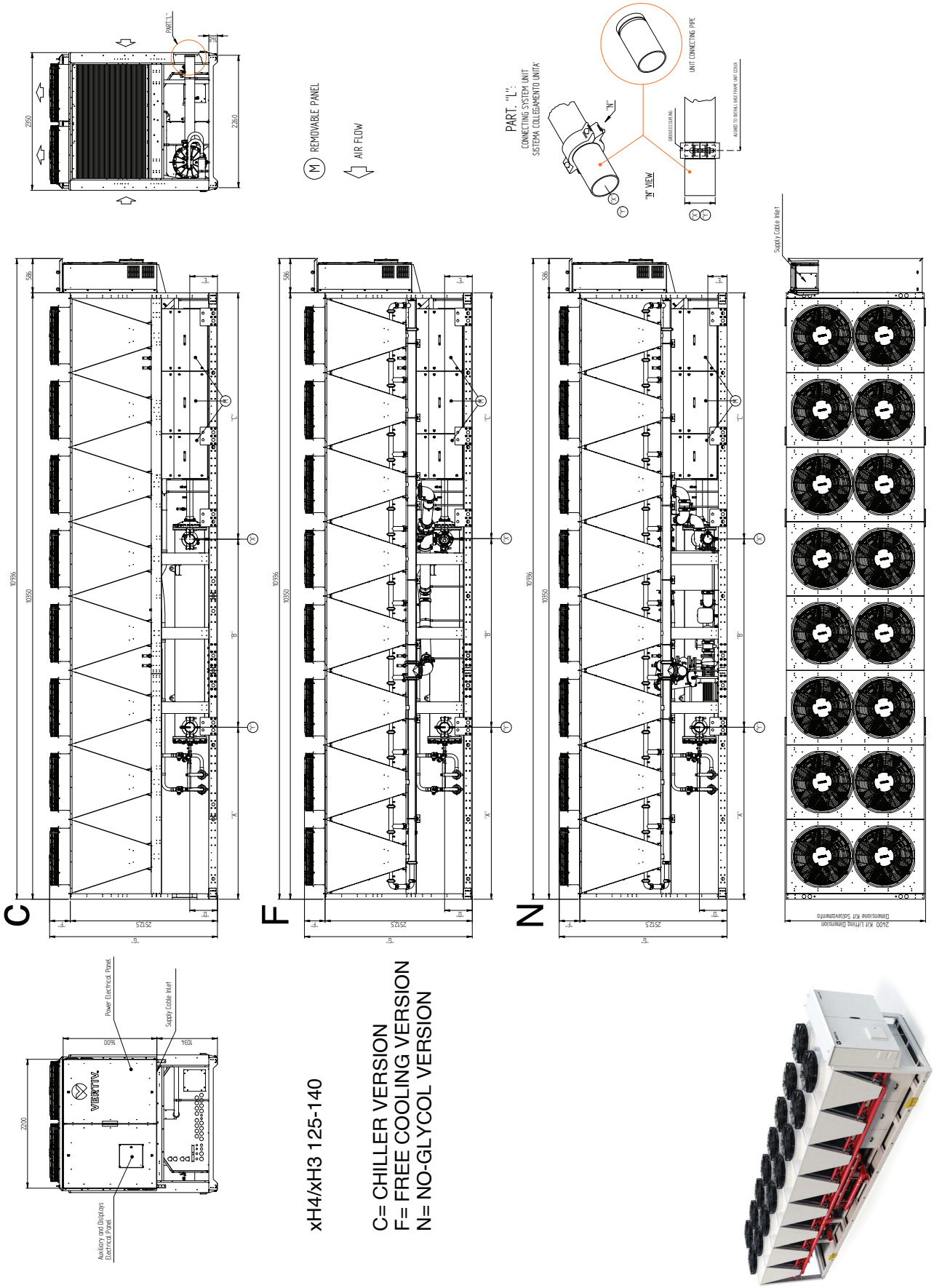
Model	Single Pump Version S ΔT=6°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Base Fans F (mm)	Base Fans G (mm)	Premium Fans F (mm)	Premium Fans G (mm)	Low Noise Fans F (mm)	Low Noise Fans G (mm)	Chilled water connections "X" (mm)		Chilled water connections 2962"Y" (mm)	
CIZ 095 CH4/CH3 100	With out Pumps	14	1665	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pumps std low press.		1603	3272	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1603	3272	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1603	3272	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CIZ 110 CH4/CH3 110	With out Pumps	14	1665	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pumps std low press.		1603	3272	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1603	3272	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1603	3272	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 095 FH4/FH3 100	With out Pumps	14	1665	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pumps std low press.		1603	3272	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1603	3272	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1603	3272	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 110 FH4/FH3 110	With out Pumps	14	1665	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pumps std low press.		1603	3272	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1685	3190	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1685	3190	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 095 NH4/NH3 100	With out Pumps	14	1665	3215	4200	472,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pumps std low press.		1603	3277	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1603	3277	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1603	3277	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 110 NH4/NH3 110	With out Pumps	14	1665	3215	4200	472,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pumps std low press.		1603	3277	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pumps high press.		1603	3277	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With inverter Pump		1603	3277	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

								Base Fans		Premium Fans		Low Noise Fans		Chilled water connections			
Model	Single Pump Version H ΔT=9°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	F (mm)	G (mm)	F (mm)	G (mm)	"X" (mm)		2962"Y" (mm)	
CIZ 095 CH4/CH3 100	Without Pump	14	1665	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		1537	3338	4205	734	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		1555	3320	4205	713	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		1555	3320	4205	713	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CIZ 110 CH4/CH3 110	Without Pump	14	1665	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		1537	3338	4205	734	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		1555	3320	4205	713	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		1555	3320	4205	713	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 095 FH4/FH3 100	Without Pump	14	1665	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		1555	3320	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		1555	3320	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		1555	3320	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 110 FH4/FH3 110	Without Pump	14	1665	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		1555	3320	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		1555	3320	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		1555	3320	4205	713	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 09 NH4/NH3 100	Without Pump	14	1665	3215	4200	472,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		1536	3344	4200	734	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		1555	3325	4200	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		1555	3325	4200	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 110 NH4/NH3 110	Without Pump	14	1665	3215	4200	472,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		1536	3344	4200	734	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		1555	3325	4200	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		1555	3325	4200	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

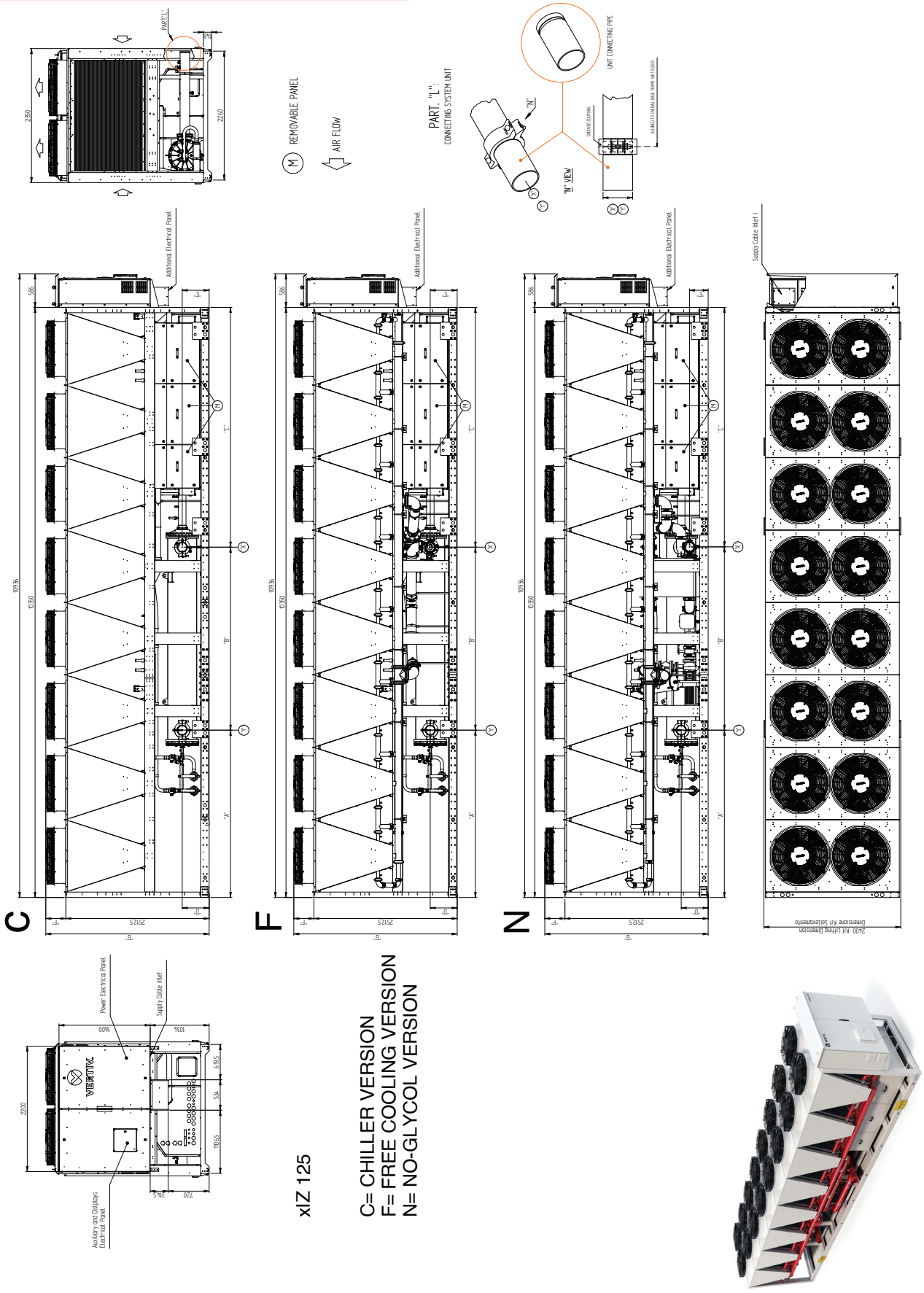
Model	Double Pump Version S ΔT=6°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Base Fans F (mm)	Base Fans G (mm)	Premium Fans F (mm)	Premium Fans G (mm)	Low Noise Fans F (mm)	Low Noise Fans G (mm)	Chilled water connections "X" (mm)		Chilled water connections 2962"Y" (mm)	
CIZ 095 CH4/CH3 100	With 2 Pumps std low press.	14	1665	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		1537	3338	4205	734	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1555	3320	4205	713	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CIZ 110 CH4/CH3 110	With 2 Pumps std low press.	14	1555	3320	4205	713	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		1665	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1537	3338	4205	734	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 095 FH4/FH3 100	With 2 Pumps std low press.	14	1665	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		1555	3320	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1555	3320	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 110 FH4/FH3 110	With 2 Pumps std low press.	14	1555	3320	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		1665	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1555	3320	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 095 NH4/NH3 100	With 2 Pumps std low press.	14	1665	3215	4200	472,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		1536	3344	4200	734	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1555	3325	4200	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 110 NH4/NH3 110	With 2 Pumps std low press.	14	1555	3325	4200	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		1665	3215	4200	472,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1536	3344	4200	734	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

								Base Fans		Premium Fans		Low Noise Fans		Chilled water connections			
Model	Double Pump Version H ΔT=9°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	F (mm)	G (mm)	F (mm)	G (mm)	"X" (mm)		2962"Y" (mm)	
CIZ 095 CH4/CH3 100	With 2 Pumps std low press.	14	1537	3338	4205	734	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		1555	3320	4205	713	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1555	3320	4205	713	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CIZ 110 CH4/CH3 100	With 2 Pumps std low press.	14	1537	3338	4205	734	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		1555	3320	4205	713	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1555	3320	4205	713	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 095 FH4/FH3 100	With 2 Pumps std low press.	14	1554	3321	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		1554	3321	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1554	3321	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 110 FH4/FH3 110	With 2 Pumps std low press.	14	1554	3321	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		1554	3321	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1554	3321	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 095 NH4/NH3 110	With 2 Pumps std low press.	14	1536	3344	4200	734	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		1555	3325	4200	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1555	3325	4200	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 110 NH4/NH3 110	With 2 Pumps std low press.	14	1536	3344	4200	734	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		1555	3325	4200	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		1555	3325	4200	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

Overall dimensions - 16 Fans Units



Overall dimensions - 16 Fans Units



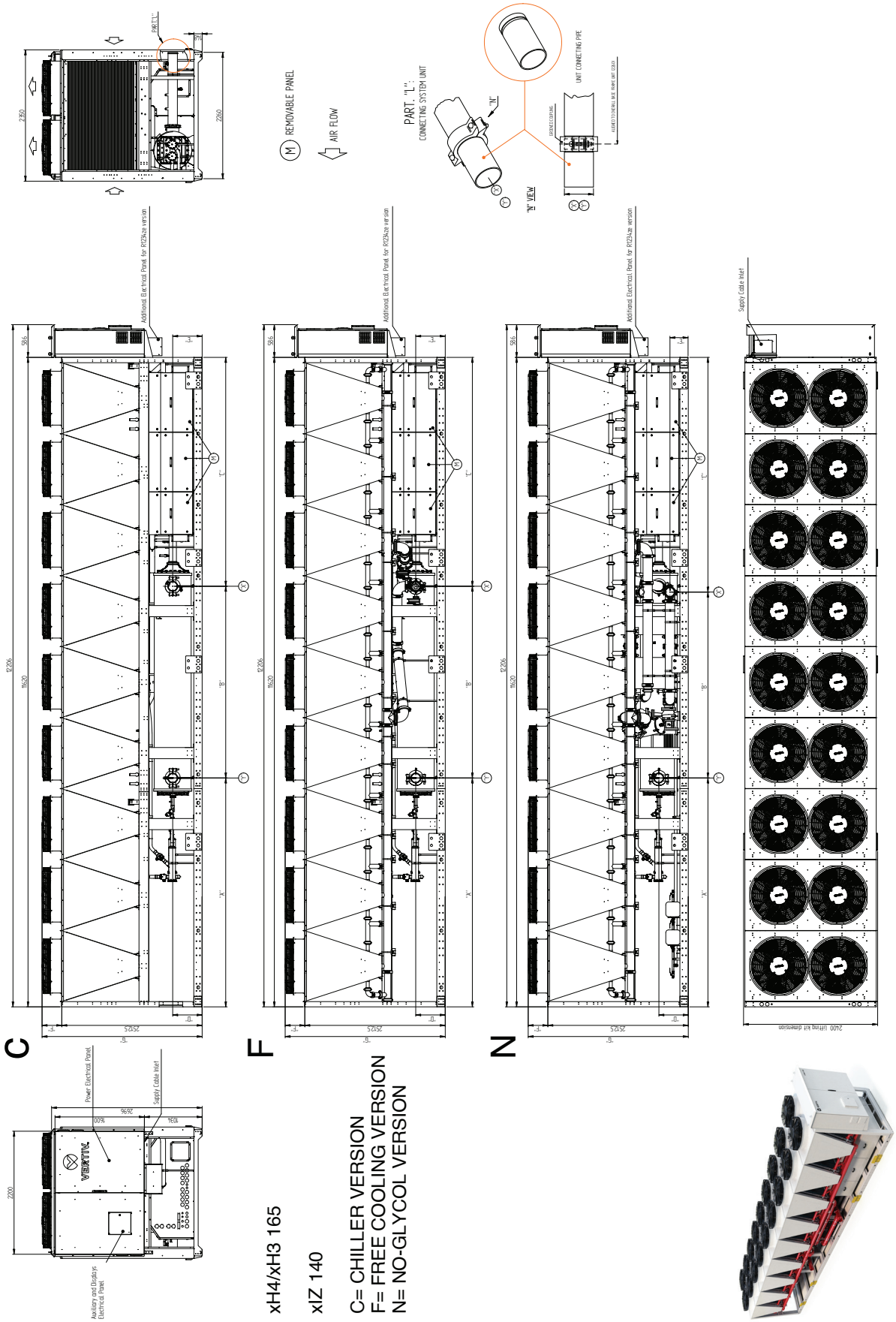
Model	Single Pump Version S ΔT=6°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Base Fans F (mm)	Base Fans G (mm)	Premium Fans F (mm)	Premium Fans G (mm)	Low Noise Fans F (mm)	Low Noise Fans G (mm)	Chilled water connections "X" (mm)			Chilled water connections 2962"Y" (mm)	
CIZ 125 CH4/CH3 125	Without Pump	16	2935	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3	
	With Pump std low press.		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
	With Pump high press.		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
	With Inverter Pump		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
CH4/CH3 140	Without Pump	16	2935	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3	
	With Pump std low press.		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
	With Pump high press.		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
	With Inverter Pump		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
FIZ 12 FH4/FH3 125	Without Pump	16	2935	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3	
	With Pump std low press.		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
	With Pump high press.		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
	With Inverter Pump		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
FH4/FH3 140	Without Pump	16	2935	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3	
	With Pump std low press.		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
	With Pump high press.		2625	3520	4205	783	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
	With Inverter Pump		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
NIZ 125 NH4/NH3 125	Without Pump	16	2935	3215	4200	472,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3	
	With Pump std low press.		2375	3775	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
	With Pump high press.		2326	3824	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
	With Inverter Pump		2326	3824	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
NH4/NH3 140	Without Pump	16	2935	3215	4200	472,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3	
	With Pump std low press.		2375	3775	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
	With Pump high press.		2326	3824	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		
	With Inverter Pump		2326	3824	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet		

								Base Fans		Premium Fans		Low Noise Fans		Chilled water connections			
Model	Single Pump Version H ΔT=9°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	F (mm)	G (mm)	F (mm)	G (mm)	"X" (mm)		2962"Y" (mm)	
CIZ 12 CH4/CH3 125	Without Pump	16	2935	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		2327	3818	4205	713	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		2327	3818	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		2327	3818	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CH4/CH3 140	Without Pump	16	2935	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		2376	3769	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		2376	3769	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 125 FH4/FH3 125	Without Pump	16	2935	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		2376	3769	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FH4/FH3 140	Without Pump	16	2935	3210	4205	472,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		2376	3769	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 125 NH4/NH3 125	Without Pump	16	2935	3215	4200	472,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		2327	3823	4200	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		2327	3823	4200	733	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		2327	3823	4200	733	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NH4/NH3 140	Without Pump	16	2935	3215	4200	472,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		2376	3774	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		2375	3775	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		2376	3774	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

Model	Double Pump Version S ΔT=6°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Base Fans F (mm)	Base Fans G (mm)	Premium Fans F (mm)	Premium Fans G (mm)	Low Noise Fans F (mm)	Low Noise Fans G (mm)	Chilled water connections "X" (mm)		Chilled water connections 2962"Y" (mm)	
CIZ 125 CH4/CH3 125	With 2 Pumps std low press.	16	2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CH4/CH3 140	With 2 Pumps std low press.	16	2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 125 FH4/FH3 125	With 2 Pumps std low press	16	2375	3770	4205	783	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FH4/FH3 140	With 2 Pumps std low press	16	2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2625	3520	4205	783	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 125 NH4/NH3 125	With 2 Pumps std low press.	16	2375	3775	4200	783	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2326	3824	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2326	3824	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NH4/NH3 140	With 2 Pumps std low press.	16	2375	3775	4200	783	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2326	3824	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2326	3824	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

								Base Fans		Premium Fans		Low Noise Fans		Chilled water connections			
Model	Double Pump Version H ΔT=9°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	F (mm)	G (mm)	F (mm)	G (mm)	"X" (mm)		2962"Y" (mm)	
CIZ 125 CH4/CH3 125	With 2 Pumps std low press.	16	2327	3818	4205	713	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2326	3819	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2326	3819	4205	733	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CH4/CH3 140	With 2 Pumps std low press.	16	2376	3769	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 125 FH4/FH3 125	With 2 Pumps std low press.	16	2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FH4/FH3 140	With 2 Pumps std low press.	16	2375	3770	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2326	3819	4205	783,5	472,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 125 NH4/NH3 125	With 2 Pumps std low press.	16	2327	3823	4200	713	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2327	3823	4200	733	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2326	3824	4200	733	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NH4/NH3 140	With 2 Pumps std low press.	16	2375	3775	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2375	3775	4200	783	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2375	3775	4200	783,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

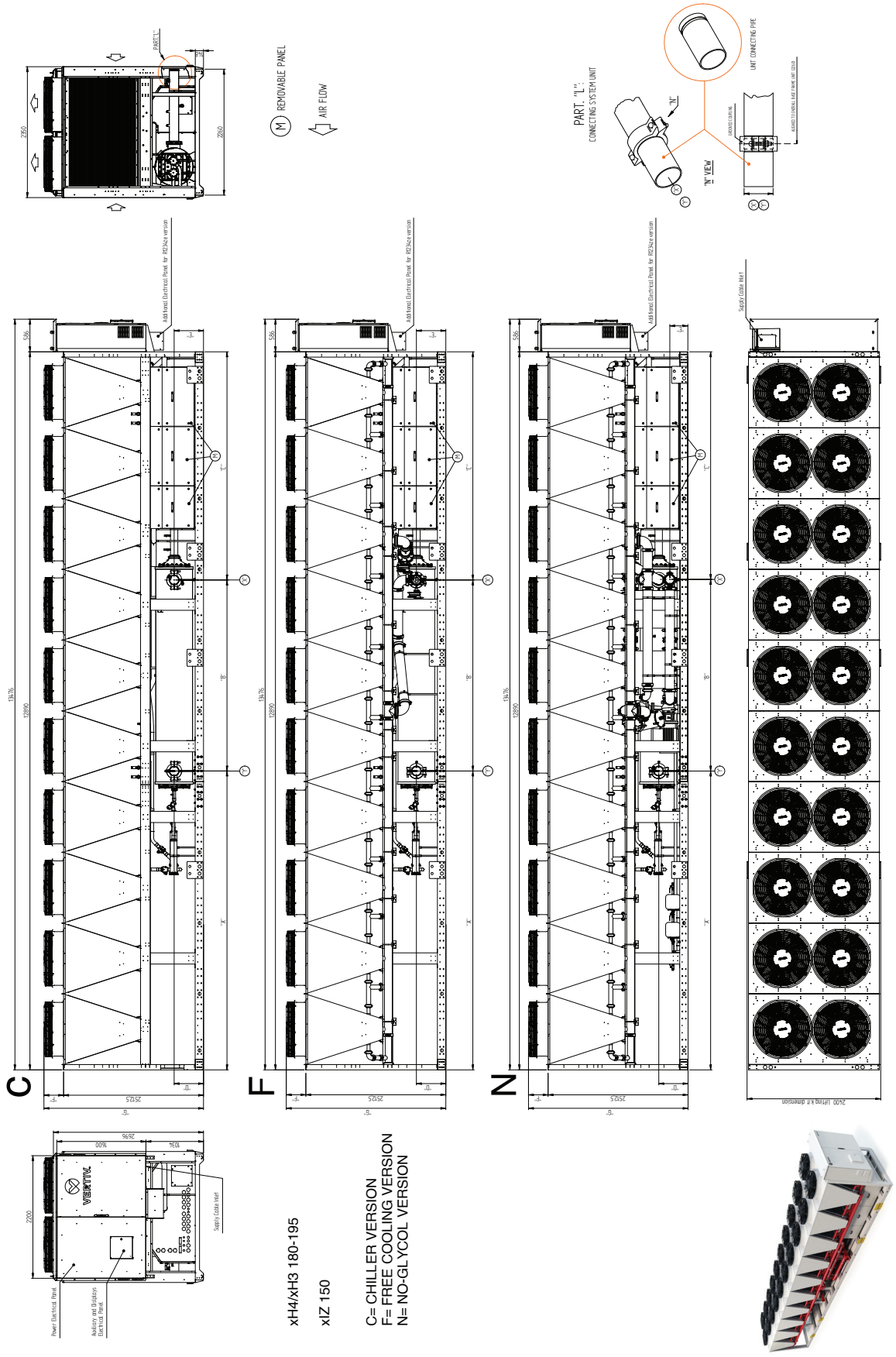
Overall dimensions - 18 Fans Units



								Base Fans		Premium Fans		Low Noise Fans		Chilled water connections			
Model	Single Pump Version H ΔT= 9°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	F (mm)	G (mm)	F (mm)	G (mm)	"X" (mm)		2962"Y" (mm)	
CIZ 140	Without Pump	18	4095	3430	4095	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		3809	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		3809	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		3809	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CH4/CH3 165	Without Pump	18	4095	3430	4095	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		3809	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		3809	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		3809	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 140	Without Pump	18	4095	3430	4095	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		3809	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		3809	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		3809	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FH4/FH3 165	Without Pump	18	4095	3430	4095	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		3809	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		3758	3767	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		3758	3767	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 140	Without Pump	18	4095	3326	4199	527,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		3809	3612	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		3809	3612	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		3809	3612	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NH4/NH3 165	Without Pump	18	4095	3326	4199	527,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With Pump std low press.		3809	3612	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		3809	3612	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		3809	3612	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

Model	Double Pump Version H ΔT=9°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Base Fans F (mm)	Base Fans G (mm)	Premium Fans F (mm)	Premium Fans G (mm)	Low Noise Fans F (mm)	Low Noise Fans G (mm)	Chilled water connections "X" (mm)		Chilled water connections 2962"Y" (mm)	
CIZ 140	With 2 Pumps std low press.	18	2391	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2391	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2391	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CH4/CH3 165	With 2 Pumps std low press.	18	2391	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2319	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2391	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 140	With 2 Pumps std low press.	18	2391	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2391	5134	4095	758	527,5	52	2564,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2391	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FH4/FH3 165	With 2 Pumps std low press.	18	2391	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2342	5183	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2342	5183	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 140	With 2 Pumps std low press.	18	2391	5030	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2391	5030	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2391	5030	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NH4/NH3 165	With 2 Pumps std low press.	18	2391	5030	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6"-168.3	Outlet	Grooved pipes connections DN150-6"-168.3
	With 2 Pumps high press.		2391	5030	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		2391	5030	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

Overall dimensions - 20 Fans Units



								Base Fans		Premium Fans		Low Noise Fans		Chilled water connections			
Model	Single Pump Version H ΔT=9°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	F (mm)	G (mm)	F (mm)	G (mm)	"X" (mm)		2962"Y" (mm)	
CIZ 150	Without Pump	20	5365	3430	4095	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections DN150-6" -168.3
	With Pump std low press.		5079	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		5079	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		5079	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CH4/CH3 180	Without Pump	20	5365	3430	4095	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections DN150-6" -168.3
	With Pump std low press.		5079	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		5079	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		5079	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CH4/CH3 195	Without Pump	20	5365	3430	4095	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections DN150-6" -168.3
	With Pump std low press.		5079	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		5079	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		5079	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 150	Without Pump	20	5365	3430	4095	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections DN150-6" -168.3
	With Pump std low press.		5079	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		5028	3767	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		5028	3767	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FH4/FH3 180	Without Pump	20	5365	3430	4095	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections DN150-6" -168.3
	With Pump std low press.		5079	3716	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		5104	3691	4095	783	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		5028	3767	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FH4/FH3 195	Without Pump / Senza Pompa	20	5365	3430	4095	527,5	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections DN150-6" -168.3
	With Pump std low press.		5028	3767	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		5104	3691	4095	783	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		5028	3767	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 150	Without Pump	20	5365	3326	4199	527,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections DN150-6" -168.3
	With Pump std low press.		5079	3612	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		5079	3612	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		5079	3612	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NH4/NH3 180	Without Pump	20	5365	3440	4085	527,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections DN150-6" -168.3
	With Pump std low press.		5079	3726	4085	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		5079	3726	4085	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		5079	3726	4085	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NH4/NH3 195	Without Pump	20	5365	3440	4085	527,5	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections DN150-6" -168.3
	With Pump std low press.		5079	3726	4085	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Pump high press.		5079	3726	4085	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With Inverter Pump		5079	3726	4085	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

								Base Fans		Premium Fans		Low Noise Fans		Chilled water connections			
Model	Double Pump Version H ΔT=9°C	N. Fans	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	F (mm)	G (mm)	F (mm)	G (mm)	"X" (mm)		2962"Y" (mm)	
CIZ 150	With 2 Pumps std low press.	20	3661	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections® DN150-6" -168.3
	With 2 Pumps high press.		3661	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		3661	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CH4/CH3 180	With 2 Pumps std low press.	20	3661	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections® DN150-6" -168.3
	With 2 Pumps high press.		3661	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		3661	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
CH4/CH3 195	With 2 Pumps std low press.	20	3661	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections® DN150-6" -168.3
	With 2 Pumps high press.		3661	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		3661	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FIZ 150	With 2 Pumps std low press.	20	3661	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections® DN150-6" -168.3
	With 2 Pumps high press.		3613	5182	4095	758	527,5	52	2564,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		3612	5183	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FH4/FH3 180	With 2 Pumps std low press.	20	3661	5134	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections® DN150-6" -168.3
	With 2 Pumps high press.		3687	5108	4095	783	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		3612	5183	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
FH4/FH3 195	With 2 Pumps std low press.	20	3613	5182	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections® DN150-6" -168.3
	With 2 Pumps high press.		3687	5108	4095	783	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		3612	5183	4095	758	527,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NIZ 150	With 2 Pumps std low press.	20	3661	5030	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections® DN150-6" -168.3
	With 2 Pumps high press.		3661	5030	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		3661	5030	4199	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NH4/NH3 180	With 2 Pumps std low press.	20	3661	5144	4085	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections® DN150-6" -168.3
	With 2 Pumps high press.		3661	5144	4085	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		3661	5144	4085	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
NH4/NH3 195	With 2 Pumps std low press.	20	3661	5144	4085	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet	Grooved pipes connections DN150-6" -168.3	Outlet	Grooved pipes connections® DN150-6" -168.3
	With 2 Pumps high press.		3661	5144	4085	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	
	With 2 Inverter Pumps		3661	5144	4085	758	327,5	271	2783,5	352,5	2865	332,5	2845	Inlet		Outlet	

INCREASE DIMENSIONS OVERALL UNIT WITH EXTENSION ROOF E.P. (OPT.)

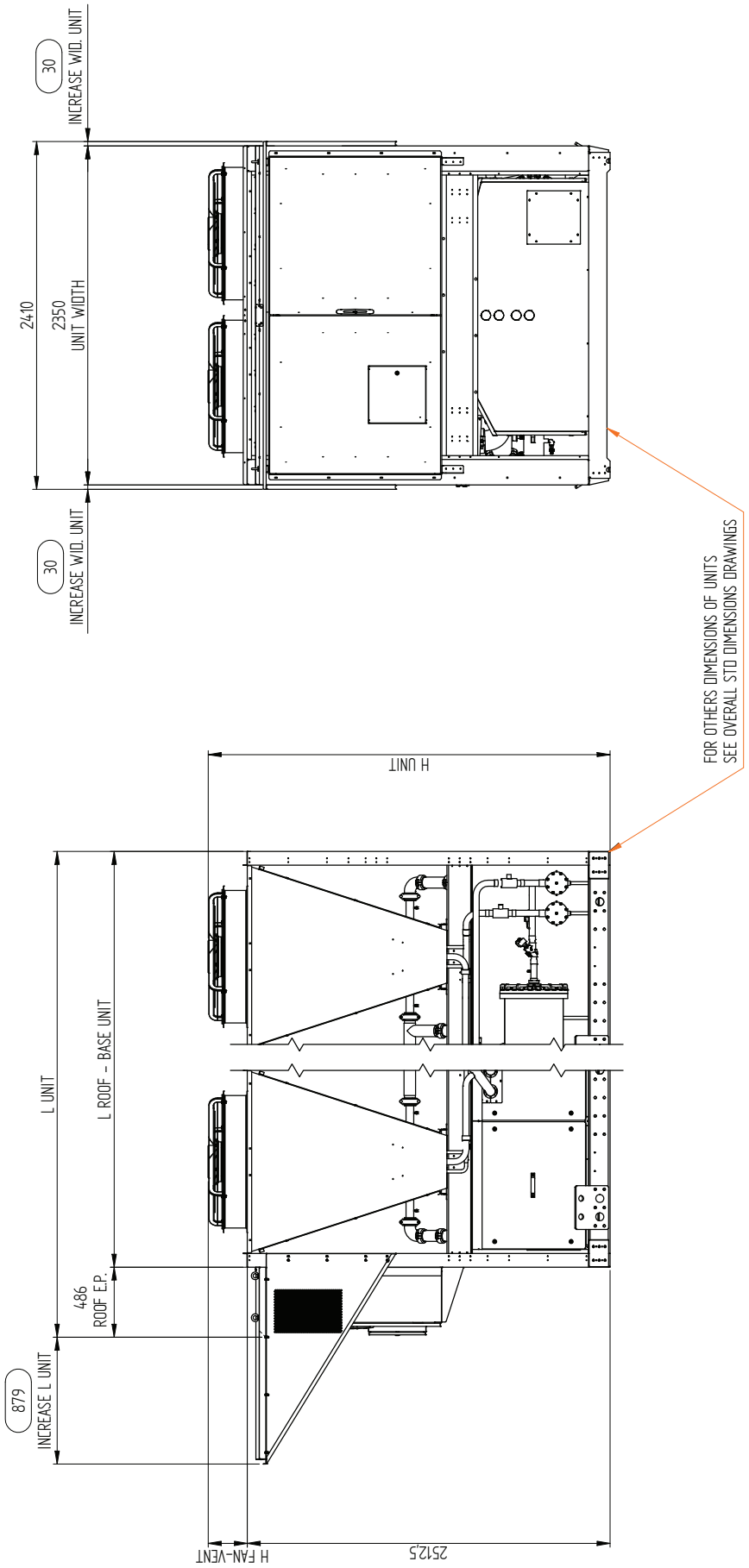
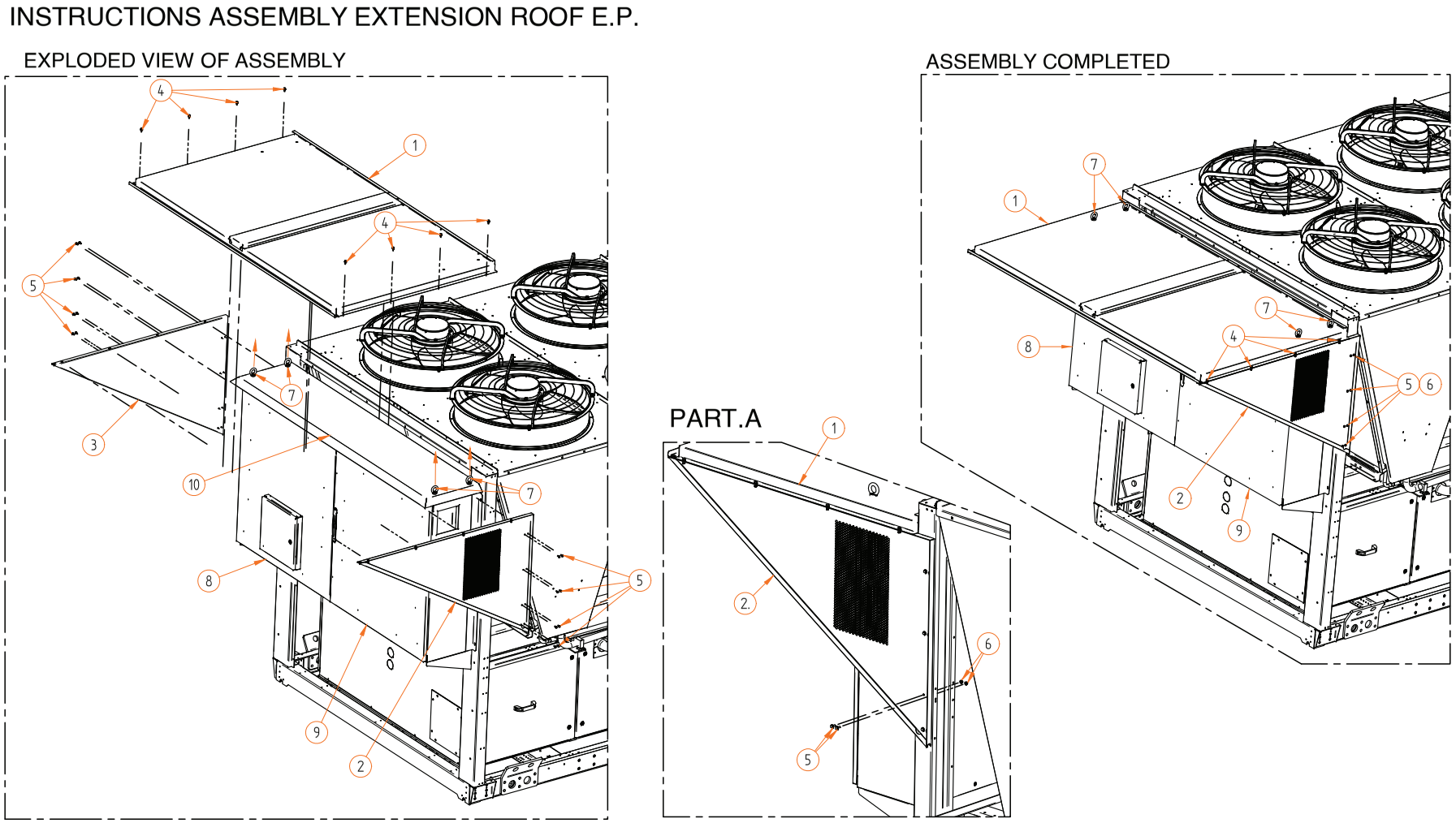


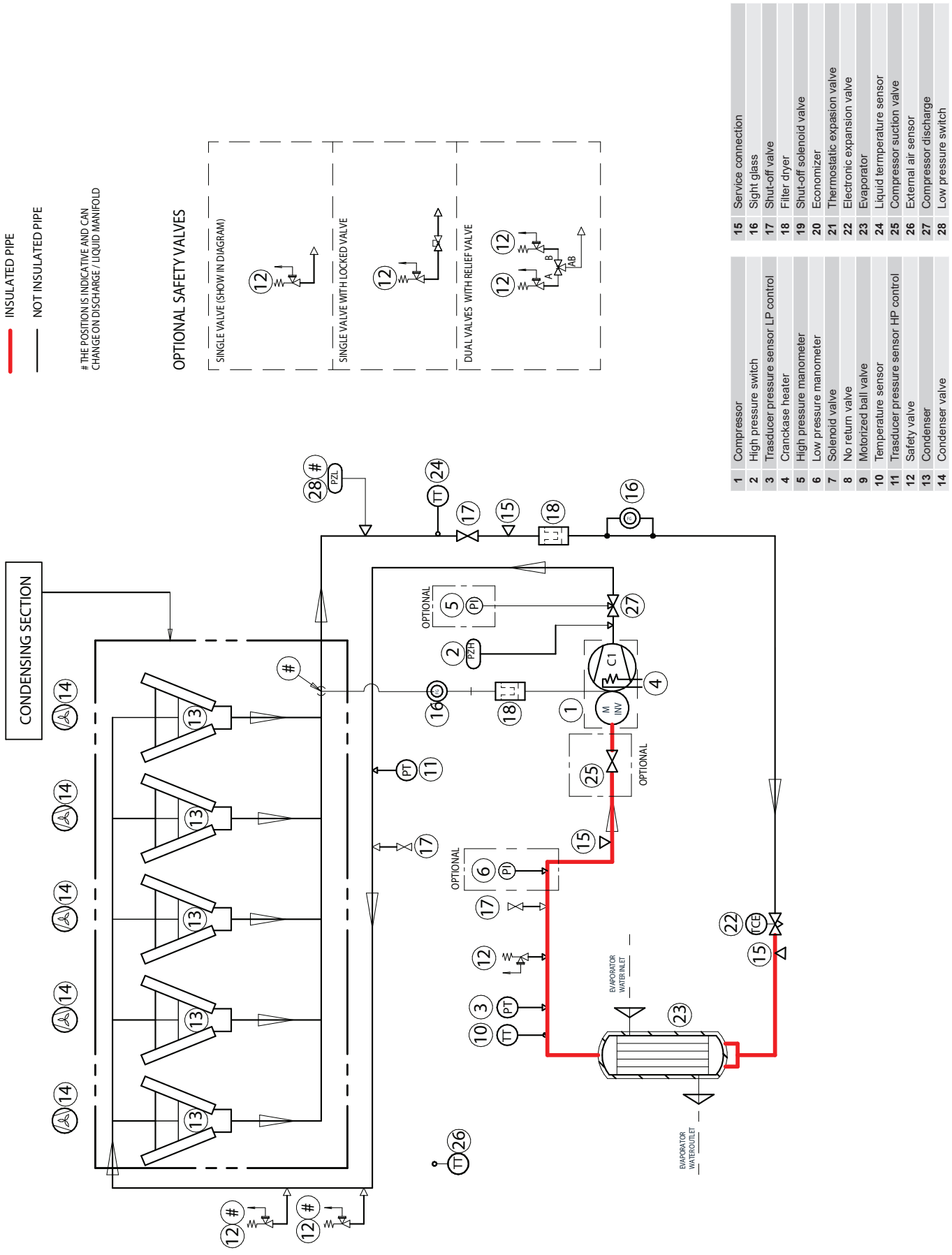
FIG 12.37 - ELECTRICAL PANEL PROTECTION ROOF ASSEMBLY (OPT.)

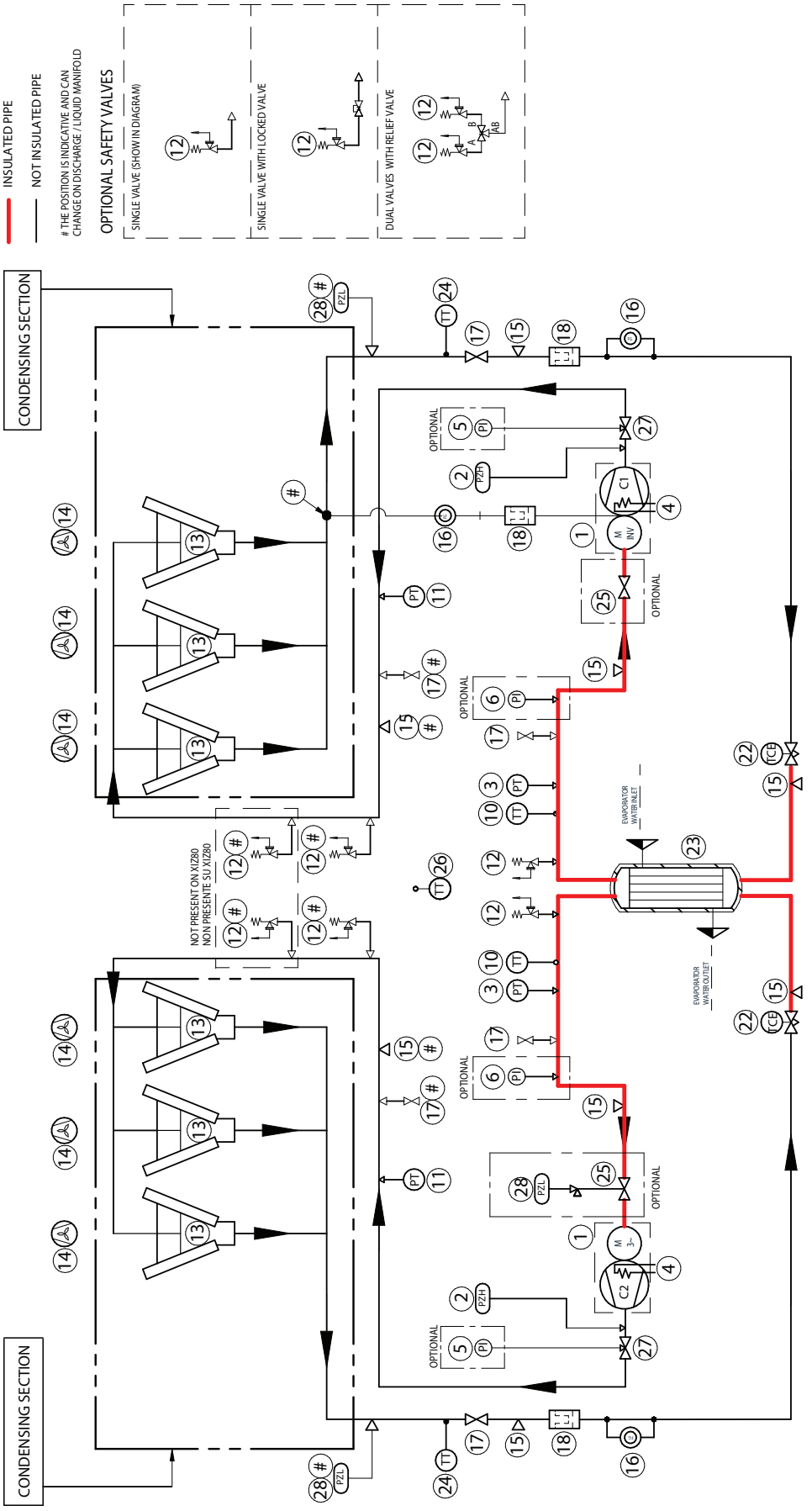


ASSEMBLY STEPS

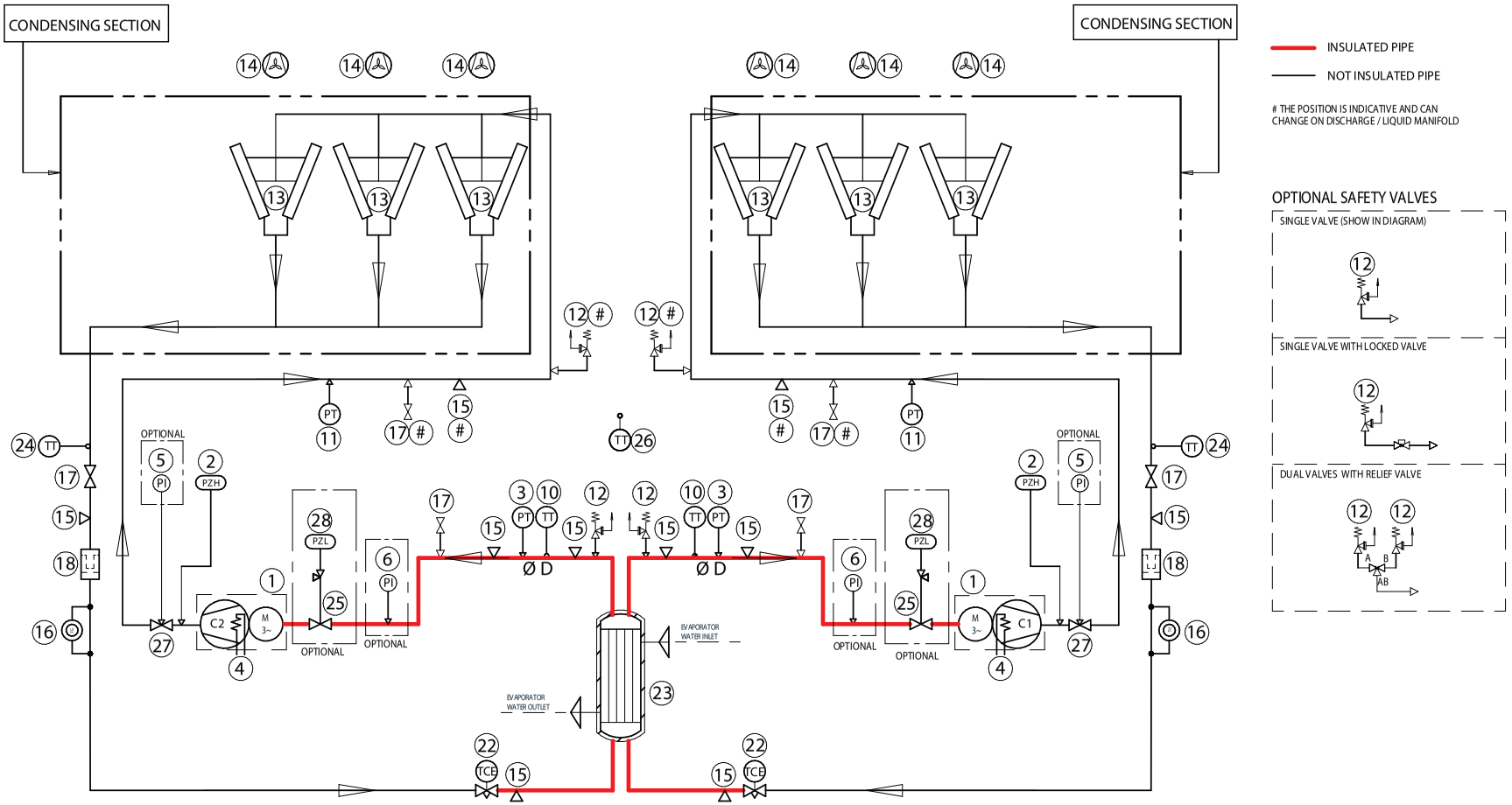
- Fix triangles (**2**) and (**3**) with 8 screws (**5**) and 8 nuts (**6**) on the present holes of the RH / LH uprights of the unit (as shown in part **A**)
- Disassemble the 4 lifting eyebolts of E.P. Box (**7**) taking care to keep the rain cover of the E.P. (**10**)
- Put extension roof (**1**) over E.P. rain cover (**10**) and triangles (**2**) and (**3**), reassemble the lifting eyebolts (**7**) and fix it with 4 screws (**4**) to the triangles (**2**) and (**3**).
- Open E.P. Box doors LH / RH (**8**) / (**9**) and limit the opening from 110° to about 90-95° by acting on the position of the mechanical door.
- Stop windproof present.

13 Refrigerant Diagram





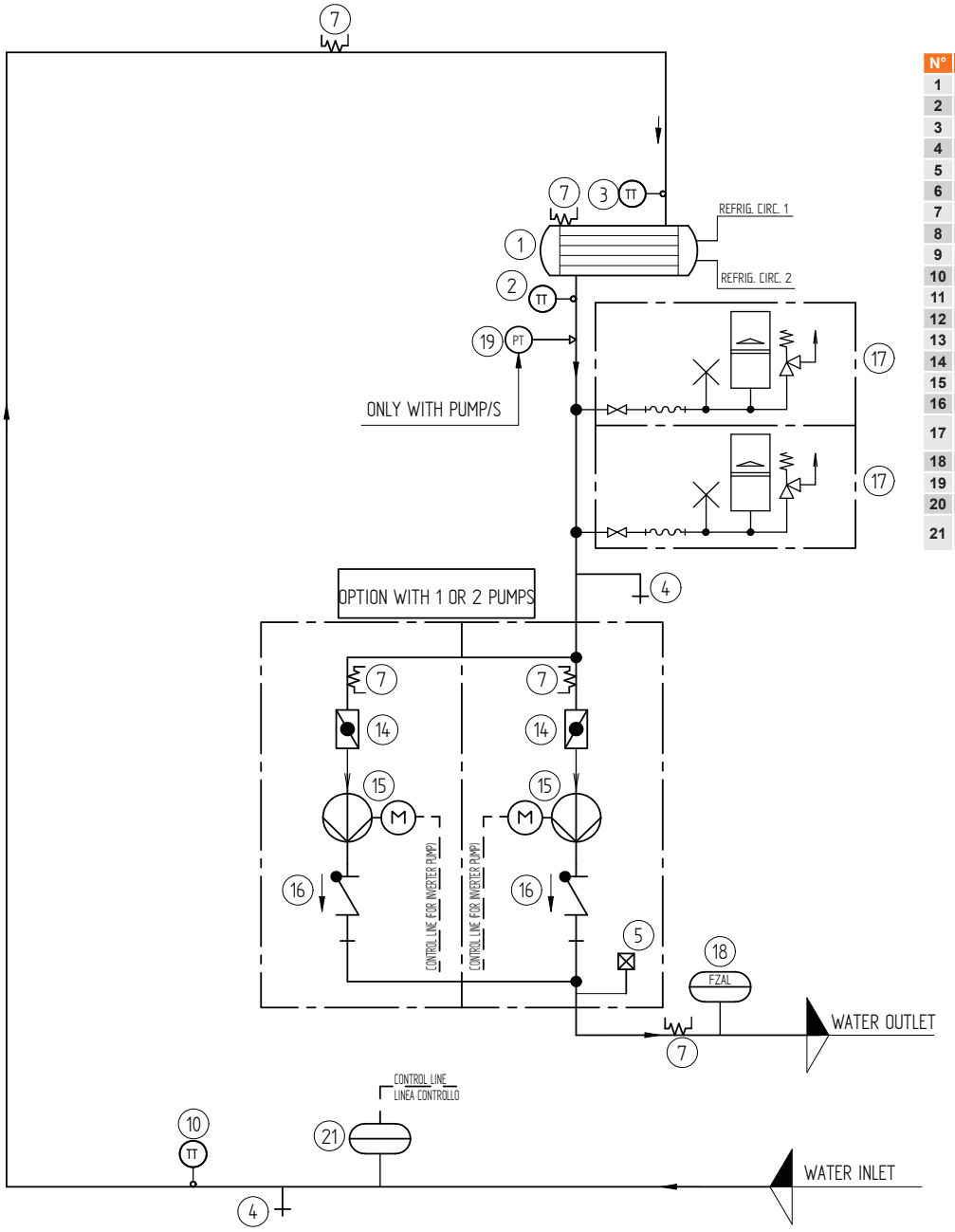
1	Compressor	15	Service connection
2	High pressure switch	16	Sight glass
3	Trasducer pressure sensor LP control	17	Shut-off valve
4	Cranckase heater	18	Filter dryer
5	High pressure manometer	19	Shut-off solenoid valve
6	Low pressure manometer	20	Economizer
7	Solenoid valve	21	Thermostatic expasion valve
8	No return valve	22	Electronic expansion valve
9	Motorized ball valve	23	Evaporator
10	Temperature sensor	24	Liquid temperature sensor
11	Trasducer pressure sensor HP control	25	Compressor suction valve
12	Safety valve	26	External air sensor
13	Condenser	27	Compressor discharge
14	Condenser valve	28	Low pressure switch



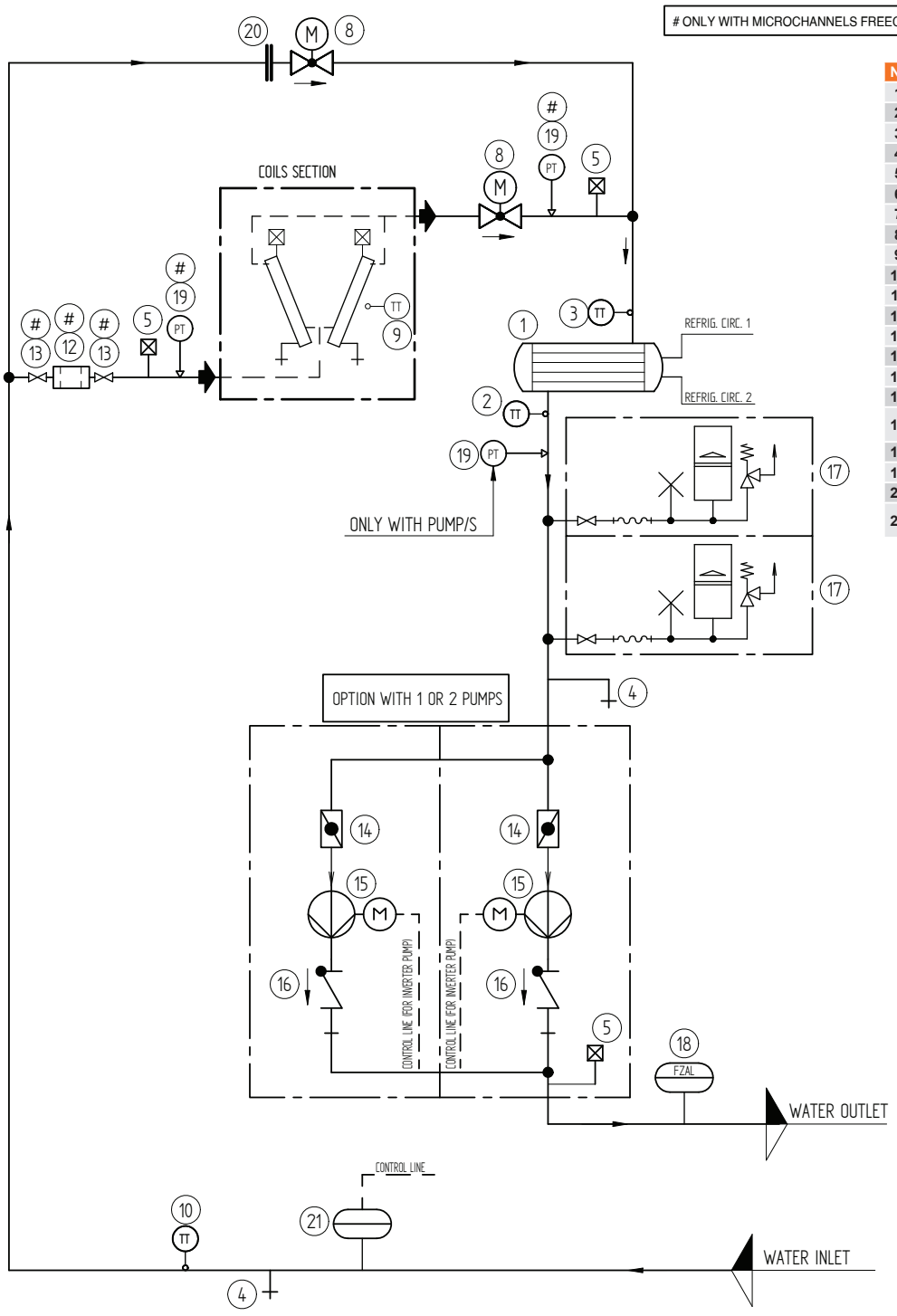
1	Compressor
2	High pressure switch
3	Trasducer pressure sensor LP control
4	Cranckase heater
5	High pressure manometer
6	Low pressure manometer
7	Solenoid valve
8	No return valve
9	Motorized ball valve
10	Temperature sensor
11	Trasducer pressure sensor HP control
12	Safety valve
13	Condenser
14	Condenser valve

15	Service connection
16	Sight glass
17	Shut-off valve
18	Filter dryer
19	Shut-off solenoid valve
20	Economizer
21	Thermostatic expasion valve
22	Electronic expansion valve
23	Evaporator
24	Liquid termperature sensor
25	Compressor suction valve
26	External air sensor
27	Compressor discharge
28	Low pressure switch

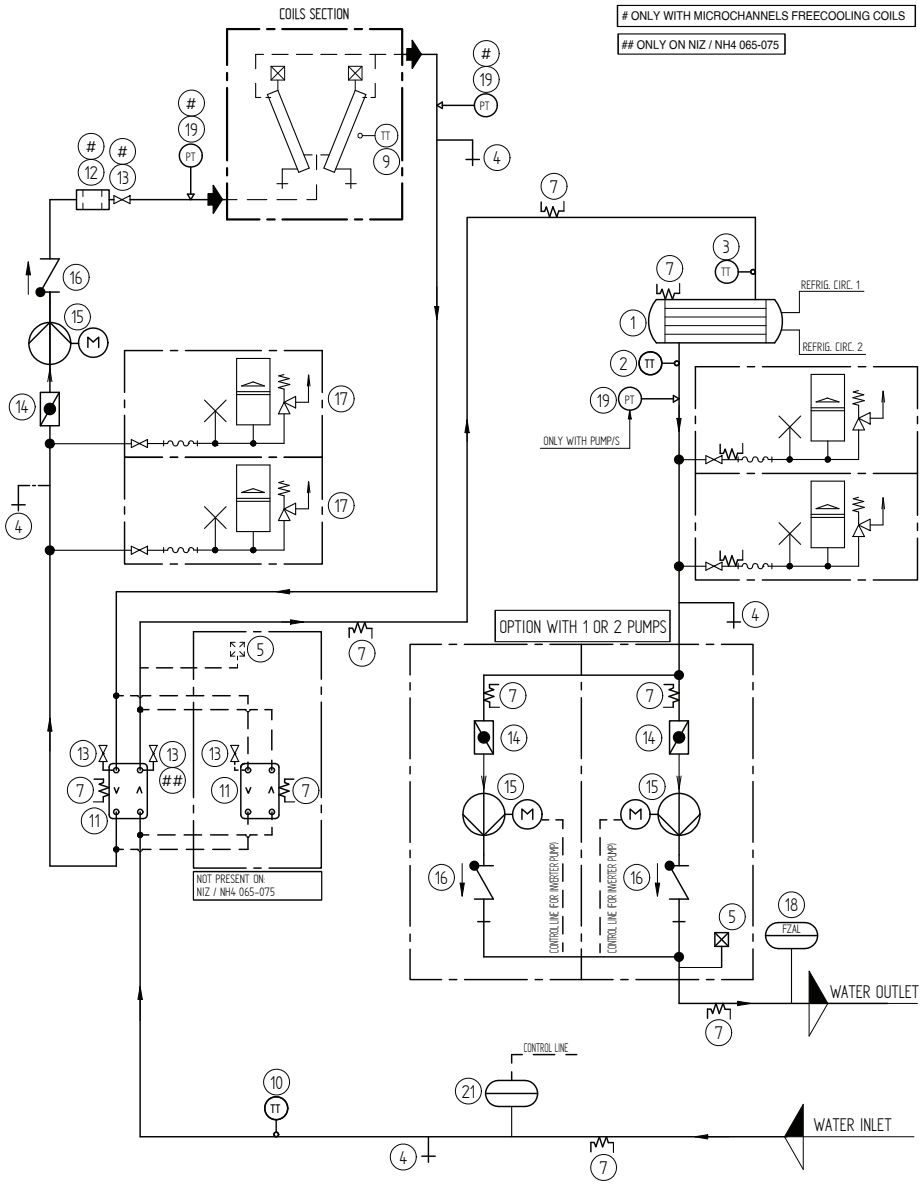
14 Hydraulic Diagram



N°	Description
1	Evaporator
2	Evaporator water outlet sersor/antifreeze
3	Evaportator water inlet sensor
4	Discharge valve
5	Manual air valve
6	
7	Electrical heaters for exchanger/pipe (optional)
8	
9	
10	
11	
12	
13	
14	Butterfly valve
15	Pump
16	No return valve
17	Kit expasion vassel - safety valve - manual air valve - flex pipe - valve (std with pump/s)
18	Flow switch
19	Pressure trasducer
20	
21	Flow meter (std with electronic pumps, optional for others)



N°	Description
1	Evaporator
2	Evaporator water outlet sersor/antifreeze
3	Evaportator water inlet sensor
4	Discharge valve
5	Manual air valve
6	freecooling coil
7	
8	2 way valve
9	Air temperature sensor
10	Control freecooling thermostat sensor
11	
12	Water filter
13	Valve
14	Butterfly valve
15	Pump
16	No return valve
17	Kit expasion vassel - safety valve - manual air valve - flex pipe - valve (std with pump/s)
18	Flow switch
19	Pressure trasducer
20	Calibrate baffle
21	Flow meter (std with electronic pumps, optional for others)



N°	Description
1	Evaporator
2	Evaporator water outlet sersor/antifreeze
3	Evaportator water inlet sensor
4	Discharge valve
5	Manual air valve
6	freecooling coil
7	Electrical heaters for exchanger/pipe (optional)
8	
9	Air temperature sensor
10	Control freecooling thermostat sensor
11	No glycol exchanger
12	Water filter
13	Valve
14	Butterfly valve
15	Pump
16	No return valve
17	Kit expasion vassel - safety valve - manual air valve - flex pipe - valve (std with pump/s)
18	Flow switch
19	Pressure trasducer
20	Calibrate baffle
21	Flow meter (std with electronic pumps, optional for others)

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